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CONNECTICUT AGRICULTURAL EXPERIMENT STATION

NEW HAVEN, CONN.

BULLETIN 145, JANUARY, 1904.

Commercial Feeding Stuffs in the Connecticut Market.

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The Bulletins of this Station are mailed free to citizens of Connecticut who apply for them, and to others as far as the editions permit.

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COMMERCIAL FEEDING STUFFS.

THE LAW REGULATING THEIR SALE.

Section 4591 of the general statutes of Connecticut so defines the term "concentrated commercial feeding stuff" that it covers practically all feeds *excepting the following*:—hay and straw, whole seeds, unmixed meal made directly from any one of the cereals or from buckwheat, and feed ground from whole grain and sold directly from manufacturer to consumer.

Section 4592 requires that every package of concentrated commercial feeding stuff shall bear a statement giving the name and address of manufacturer or importer, the number of net pounds in the package, the name of the article and the percentages of protein and fat contained in it.

Section 4593 requires every manufacturer, importer, agent or seller to file with this Station, upon request, a certified copy of the statement above described.

The penalty prescribed for violation of the foregoing sections is not more than \$100 for the first offense and not more than \$200 for each subsequent offense.

Section 4595 authorizes this Station to take samples from any manufacturer, importer, agent or dealer in a prescribed fashion and requires this Station to analyze, annually, at least one sample of each brand which it has collected and to publish these analyses in station bulletins, "together with such additional information in relation to the character, composition and use thereof as may be of importance."

The Dairy Commissioner is charged with the enforcement of the provisions of these sections of the statutes.

In compliance with the requirements of this law the following report on feeding stuffs has been prepared.

SAMPLING OF COMMERCIAL FEEDING STUFFS.

During the fall of 1903, Mr. V. L. Churchill, the sampling agent of this Station, visited forty-eight towns and villages of this state and took three hundred and four samples of feeds in the way prescribed by law. These samples have been examined chemically and microscopically and the results appear in the following pages with appropriate discussion.

There are also given twenty-four analyses of feeds which were sent to the Station for analysis by individuals.

To make it easier to understand these analyses and their discussion, the following explanations are prepared:—

EXPLANATIONS OF ANALYSES OF FEEDING STUFFS.

An analysis gives the percentage amounts of Water, Ash, Protein, Fiber, Nitrogen-free Extract, and Fat.

Percentage Amount is the amount in 100. If the protein in a feed is 17.5 per cent., every 100 pounds of that feed contains 17.5 pounds of protein; and since a ton is twenty hundred pounds, a ton of the feed will contain twenty times 17.5, or 350 pounds of protein.

Water. However dry a feeding stuff may appear to be, it always contains a considerable and variable quantity of water which cannot be seen or felt, but which can be driven out by heat. The amount of water thus present in feeding stuffs is constantly changing with the temperature and dryness of the air about them, and accordingly no very close comparison of different feeds is possible unless the proportions of water they contain are known and comparison is made on perfectly dry or water-free substance.

Ash is what is left when the combustible part of a feeding stuff is burned away by heating to faint redness in a current of air and besides a little charcoal and sand, which are accidental impurities, consists chiefly of lime, magnesia, potash and soda, combined with chlorine and carbonic, sulphuric and phosphoric acids.

Protein is a general term which includes all those nitrogenous materials of a concentrated feeding stuff which, when separated

in a pure state, bear a general resemblance in composition and properties to egg albumin (white of egg), flesh fibrin (lean meat), and milk casein (curd). It is from this protein of the food alone that the animal can make albumin, fibrin and casein. The nitrogenous materials are the most costly and by far the most valuable ingredients of concentrated commercial feeds, which should be bought chiefly for the protein which is in them.

Nitrogen-free Extract, sometimes called *Carbohydrates*, includes starch, gum, sugar and pectin bodies. They are readily extracted from the feeding stuff by water and dilute acid.

Fiber is the essential constituent of the walls of vegetable cells and is seen in a nearly pure state in cotton fiber or paper pulp. It is the most insoluble part of the vegetable substance and of quite subordinate value in the ration.

Ether Extract includes fat oil, solid fat, wax, chlorophyll (the green coloring matter of plants), and other coloring matters, in brief everything which can be extracted from the perfectly dry feeding stuff by absolute ether.

Regarding the uses of the above-named parts of feeds:

Water and *ash* need not be considered, for, while indispensable to stock, both are abundantly supplied in other ways than in commercial feeds.

Protein may easily be made over by the animal into its own substance, i. e., into muscles, tendons and the various working tissues and membranes, because these necessary parts of the animal machine are themselves made up of the same kind of materials, or, chemically speaking, have the same composition as the protein bodies.

Fiber and the *nitrogen-free extract*, on the other hand, cannot serve for building up the muscles and other parts of the growing animal and cannot restore the waste and wear of those parts of mature animals, because they are of a very different nature. They contain no nitrogen, an element which enters into all the animal tissues (proteins), to the extent of some sixteen per cent. of their dry matter.

Fiber and the *nitrogen-free extract* cannot restore the worn-out muscles or membranes of the animal any more than coal can be made to renew the used-up packing, bolts, valves, flues

and gearing of a steam-engine. Proteins are to the ox or the man what brass and iron are to the machine, the materials of construction and repair.

Fat, fiber and nitrogen-free extract are, furthermore, to the animal very much what coal and fuel are to the steam-engine. Their consumption generates the power which runs the mechanism. Their burning (oxidation) in the blood of animals produces the results of life just as the combustion of coal in the fire-place of the steam-engine produces the motion and power of that machine. For this combustion in the system, digestible fat has more than twice the value of digestible nitrogen-free extract.

There is, however, this difference between the engine and the animal: the former may be stopped for repairs; the latter may run at a low rate, but if it be stopped it cannot resume work. Hence the repairs of the animal must go on simultaneously with its wastes. Therefore, the material of which it is built must admit of constant replacement, and the dust and shreds of its wear and tear must admit of escape without impeding action. The animal body is as if an engine were fed not only with coal and water, but with iron, brass and all the materials for its repair, and also is as if the engine consumed its own worn-out parts, voiding them as ashes or as gas and smoke. Proteids, or the blood- and tissue-formers, are thus consumed in the animal, as well as the fat, fiber and nitrogen-free extract or fuel proper. The fact that proteids admit of consumption implies that when the proper fuel is insufficient, they may themselves serve as fuel. Such is the case, in fact. But, nevertheless, the two classes of substances have distinct offices in animal nutrition, and experience has demonstrated that for each special case of animal nutrition a special ratio of digestible proteids to digestible fat, fiber and nitrogen-free extract is the best and most economical, and, within certain limits, is necessary.

The Uses of Analyses of Feeding Stuff.

These uses are several. First, by an analysis compared with the average of others, any buyer of a feed can see whether it is of the usual quality. Thus on page 31, the analysis of cotton

seed meal, No. 10983, compared with the average of twenty-five analyses given on the same page, shows that its quality is far below average as regards protein, the most valuable ingredient.

Secondly, by an analysis compared with the manufacturer's guaranty the buyer can see whether in composition the feed meets what is claimed for it. Thus on page 43 the analyses of cream gluten show that the feed contained on the average about 3 per cent. more of protein than was called for by the manufacturer's guaranty.

Thirdly, an analysis often shows clearly whether or not the feed is adulterated and may indicate also the form of adulteration. This use is fully illustrated by the discussion of adulterated wheat feeds on page 12 of this report.

It also makes clear the composition of mixtures which are sold under names which either convey no meaning or convey a false impression. Thus the analysis of a "ground oil cake compound" given on page 59, and mentioned on page 23 shows that instead of being prepared from the expressed meal of some oil seed, like linseed, it is merely ground wheat screenings consisting largely of weed seeds.

Fourthly, comparison of analyses of a number of kinds of feed with their prices will greatly help in deciding whether any one of them is worth to the feeder what is asked for it. Too often the prices of feeds bear no relation to their real feeding value.

Lastly, the chief use of these tables by feeders should be as a guide to the skillful compounding of rations for farm animals. How this is done cannot be briefly explained within the limits of a bulletin. A knowledge of the principles of cattle feeding is essential, which should be gathered by studying books which treat of the principles of cattle-feeding and of the art of compounding rations.

DISCUSSION OF THE ANALYSES.*

COTTON SEED MEAL.

Analyses on pages 30-31.

The average percentage of protein in the twenty-five samples examined is lower this year than for some years past, being 43.16.

The following brands fail to meet the manufacturers' guarantee by more than 0.7 per cent. of protein:

A. B. C. brand, Augusta Brokerage Co.; American Cereal Co.; American Cotton Oil Co. (one sample); R. W. Biggs Co. (two samples); Green Diamond brand (two samples); Hayley & Hoskins, Star brand; Sunflower brand (three samples).

By the rules of the Cotton Seed Crushers Association, "choice" meal must contain at least 8 per cent. of ammonia, equivalent to 41.19 per cent. of protein, and "prime" meal must contain at least 8 per cent. of ammonia, or if from the South Atlantic States $7\frac{1}{2}$ per cent. of ammonia, equivalent to 38.62 per cent. of protein. By this standard two of the samples, Hayley & Hoskins' 10983, and Sunflower brand, sold by the American Cereal Co., 11074, were neither "choice" nor "prime" meal. Regarding sample 10983, however, Messrs. Hayley & Hoskins write that at the time of sale they advised the buyer that it was the last carload of old season's prime, and they were loath to make the sale as it had lain six or seven months in warehouse and might show deterioration.

A sample of Hayley & Hoskins' prime meal, 10063, sent for analysis by Meech & Stoddard of Middletown, contained 42.62 per cent. of protein.

The average percentages of protein and fat, as determined at this Station, and the average prices, quoted by retailers, at the time the samples were drawn, have been as follows for the last four years:

* The microscopic work in connection with the analyses reported in this paper was wholly done by Mr. Winton; the chemical analyses were made by Messrs. Ogden, Silverman and Bailey; the results were prepared for publication by the director.

COTTON SEED MEAL.

9

	1899	1900	1901	1902	1903
No. of Samples.....	10	4	6	8	25
Percentage of protein	46.4	43.9	44.4	43.0*	43.16
“ “ fat	10.4	8.6	9.8	10.3	9.22
Average price.....	\$24.00	27.00	28.80	29.70	29.04

The price of cotton seed meal has risen in the last five years, and the average percentage of protein has on the whole declined.

LINSEED MEAL.

Analyses on pages 32-33.

“Linseed Meal,” “Oil Meal,” and “Flax Seed Meal” are trade names for ground flax seed from which more or less of the oil has been removed. By the “old process” the oil is partly removed by pressure, leaving, however, from 5 to 10 per cent. of oil, “fat,” in the meal. By the “new process” the oil is so far extracted with benzine as to leave less than two and a half per cent. in the meal. New process meal is more uniform in composition and contains more protein than old process meal. All the samples of each kind analyzed this year have been of good quality and unadulterated. The average percentages of protein and fat found in linseed meal for the last four years, as determined at this Station, with the average prices at the time the samples were drawn, as quoted by retailers, are as follows:

	New Process.				Old Process.			
	1900	1901	1902	1903	1900	1901	1902	1903
No. of Samples.....	2	3	4	2	3	4	6	9
Percentage of protein..	38.4	39.0	39.8	36.4	31.3	34.4	32.8	33.1
“ “ fat	2.4	1.8	2.1	3.2	6.7	7.7	7.8	7.5
Average price	\$32.50	30.00	31.00	32.50	31.00	30.50	32.00	30.77

Neither of the samples of new process linseed meal met the manufacturer's guaranty, in respect of protein.

Two samples of old process meal, from the Midland Linseed Co., Minneapolis, did not bear the statement of guaranty which is required by law.

The following brands did not contain the guaranteed amounts of protein:

* 43.7 including 4 other partial analyses.

11241. Export brand Linseed Meal, Chapin & Co., Boston. Found 31.44, guaranteed 36.0.

10951. Sold by Hammerstein & Co., Buffalo, N. Y. Found 34.06, guaranteed 38.3.

11117. Sold by Hunter Bros., St. Louis, Mo. Found 31.19, guaranteed 34.0.

11133. Sold by Metzger Seed and Oil Co., Toledo, Ohio. Found 31.75, guaranteed 34.0.

Guarantees of from 35 to 38 per cent. of protein in old process meal would seem unsafe and unreasonable, for this article, as found in our market, seldom contains as much as 35 per cent. of protein.

Linseed meal can usually be bought in car lots at about the same price as cotton seed meal and at this writing for \$2.00 per ton less than cotton seed meal. The high retail price usually quoted, \$31 to \$32, is because of the small demand for linseed, which "moves slowly" in the retail trade, although it is a concentrated, palatable and safe feed.

WHEAT PRODUCTS.

These are by-products in the manufacture of wheat flour. Several different processes of milling are in common use, yielding by-products which are not entirely alike in composition. The products made from winter wheat also differ in composition from those from spring wheat.

Wheat Bran consists of the outer layers of the wheat berry, which are dark in color and do not easily pulverize.

Wheat Middlings, as found in the feed market, consist of inner layers of the covering of the berry, which are lighter in color and more easily pulverized than bran, and of other parts from which fine white flour cannot be made.

Red Dog Flour is the poorest grade of flour; off color and often sold as a cattle food.

Many mills do not sell bran and middlings separately, but run them together, often with other waste wheat products, and sell the mixture as "Mixed Feed."

With few exceptions the samples of wheat feed described in the tables of analyses were not accompanied, as is required by law, with any statements of composition.

Bran from Winter Wheat.

Analyses on pages 32-33.

The seven samples examined are all genuine with no evidence of any wilful admixture of foreign matter. Fragments or the whole grains of certain weed seeds are commonly found in bran and other wheat feeds. These are things which screening does not perfectly separate from the wheat and which therefore come out with the bran in the milling process.

Samples 11004, 10947, and 11038 contain rather larger amounts of this foreign matter than the other samples. Sample 11087 is a very light-colored bran, quite free from foreign matters, but made from soft Canadian wheat, which perhaps explains its unusual composition. The protein in this sample, 12.81 per cent., is 2.7 per cent. less than the average found in the six other samples examined, 15.52 per cent.

The average amount of protein found this year in winter bran is also considerably less than has been found in recent years, as appear in the statement on page 13.

Bran from Spring Wheat.

Analyses on pages 32-35.

All of the sixteen samples collected are unadulterated and of good quality though containing rather less protein than has been found in other recent years.

A single sample of spring bran, 10863, made by the Porter Milling Co. and sent by G. M. White & Co. of East Hartford Meadow, contains 15.37 per cent. of protein.

Middlings.

Analyses on pages 34-37.

The samples, with few exceptions, are of fair quality. Sample 10961, from the Randall Mill Co., Tekonsha, Mich., contains no excessive quantity of foreign matter, but has only 12.62 per cent. of protein, a very low per cent. of fiber and seven per cent. more of starchy matter than the average.

Sample 11136, Colonial Middlings, made by the Miner-Hillard Mill Co., Wilkesbarre, Pa., is not a pure wheat middlings but a mixture of wheat and corn products containing $3\frac{1}{2}$ per cent. less of protein and 0.7 per cent. more of fat than pure wheat

middlings and sold apparently for \$1.50 per ton more than the latter. The guaranteed percentage of protein is 13.56, which is fully met by the analysis. The amount of fat found, 5.73 per cent., is a per cent. less than is guaranteed. Both the samples above named are excluded from the average given in the tables.

The average percentage of protein found this year in the winter and spring middlings is considerably less than it has been in recent years.

Mixed Feed from Winter Wheat.

Analyses on pages 36-41.

Most of the thirty-eight samples examined are of fair quality. Sample 11012 contains some traces of corn cob, and 11127, a small amount of cracked corn, but not enough to seriously affect the chemical composition.

No. 11063. The Ideal Mixed Feed, made by Charles R. Lull of Milwaukee, Wis., contains many oat hulls or oats which reduce the percentage of protein to 1.7 per cent. below the average for mixed feed and raise the percentage of woody fiber by 4.3 per cent. This article is guaranteed to contain 17.6 per cent. of protein and 3.0 per cent. of fat. It contains less protein than is guaranteed by 2.6 per cent. On account of these facts this analysis is excluded from the average. The average composition shows less protein than the averages of previous years.

Spurious Mixed Feed.

Among the unclassified mixed feeds are two which, while bearing the name mixed feed, are not mixed feed in the sense in which the term is generally used in the feed trade, but are mixtures of wheat feed and corn cobs, a material greatly inferior to wheat bran in feeding value. One of them is sold above the average price of genuine mixed wheat feed, the other for \$1.50 per ton below it.

One of them, 11029, Blue Grass Mixed Feed, comes from Henderson, Kentucky, which seems to be the home of this kind of material; the other, 11237, is sold by Balch & Platt, of Winsted, who state that they are unable to say from whom they bought the feed.

Mixed Feed from Spring Wheat.

Analyses on pages 40-43.

All of the eighteen samples mentioned in the table are pure, though two of them, Nos. 11048 and 11256, contain an undue proportion of weed seeds or fragments of them. The average percentage of protein is lower than it has been for the three years preceding.

A sample of Diamond Mixed Feed, 11288, made by Annan, Burgh & Co., St. Louis, sent by G. M. White & Co., East Hartford Meadow, contained 17.38 per cent. of protein.

Average Composition of the Various Pure Wheat Products.

The average composition of the various pure wheat feeds sold in Connecticut in the last five years, with their prices, as given by retailers, appear in the following table:

AVERAGE COMPOSITION AND PRICE OF WHEAT FEEDS IN CONNECTICUT IN 1899, 1900, 1901, 1902 and 1903.

1899	Bran.		Middlings.		Mixed Feed.	
	Winter.	Spring.	Winter.	Spring.	Winter.	Spring.
Protein	15.9	15.6	15.8	15.6	16.8	16.8
Fat	4.3	4.7	4.4	4.7	4.5	5.1
Ton price	\$19.80	19.14	19.00	19.25	19.44	19.25
1900						
Protein	16.1	16.5	17.7	19.1	18.1	17.6
Fat	4.6	5.0	4.7	5.5	4.7	5.3
Ton price	\$21.09	20.00	21.00	21.50	21.00	20.80
1901						
Protein	16.3	17.3	18.0	19.7	17.5	18.5
Fat	4.5	4.7	5.0	5.5	4.7	5.1
Ton price	\$21.80	21.06	22.75	22.10	22.20	22.20
1902						
Protein	17.1	16.7	18.1	19.2	17.7	17.7
Fat	4.6	4.9	4.4	5.4	4.6	5.1
Ton price	\$23.37	20.90	23.85	23.44	22.00	22.35
1903						
Protein	15.5	15.9	16.4	17.9	16.7	16.9
Fat	4.5	4.9	4.5	5.0	4.5	5.0
Ton price	\$23.00	22.50	25.55	25.50	23.55	23.53

This table indicates that:

1. The spring wheat products, as a rule, have somewhat higher percentages, both of protein and fat, than the winter wheat products.
2. This difference is rather more pronounced and constant in the case of middlings than in that of either bran or mixed feed.
3. The percentages of protein in bran are rather lower than in either middlings or mixed feed.
4. On the average the winter wheat products sell at a slightly higher price than the spring wheat products in spite of the higher protein and fat content of the latter.
5. The percentages of protein in all the wheat feeds have been considerably lower in 1903 than in either of the three years immediately preceding. The prices have, however, ruled higher.

Guaranties of Wheat Feeds.

The law requires that wheat feeds shall be sold with a guaranty of composition.

Of the one hundred and twenty-one samples examined, only eight had a guaranty that could be found by our agent.

The American Cereal Co. and the Brooks Elevator Co. are the only manufacturers of genuine mixed wheat feed which, as far as we can learn, have offered guaranties.

On the other hand, the mixtures which are not genuine mixed wheat feed but resemble it in appearance, are sold at about the same price and are called "mixed feeds," have a guaranteed composition.

It has been urged that wheat feeds are staple articles, uniform in composition and not adulterated and therefore that no guaranty was needed. But our analyses show that these feeds vary decidedly in composition from year to year and that there is more fraud in the sale of mixed feed than we have found in the sale of any other feed on the market. If the buyer can get no guaranty that his wheat feeds are of standard quality and if they are commonly adulterated, he must drop them for the gluten feeds and dried brewers and distillers grains, which are more constant in composition and with which a guaranty is given.

CORN PRODUCTS.

Maize Meal and Maize Bran.

Analyses on pages 42-43.

The three analyses of meal show lower percentages of both protein and fat than the average of forty-eight analyses made a year ago. This is to be explained, probably, by the poor quality of the 1902 crop.

Gluten Meal.

Analyses on pages 42-43.

A single brand only of gluten meal was found in the State this year, viz: Cream Gluten, made by the Illinois Sugar Refining Co. of Chicago.

The percentages of protein and fat in the three samples examined were well above the guaranty.

Gluten Feed.

Analyses on pages 42-47.

Fourteen samples of Buffalo Gluten Feed, made by the Glucose Sugar Refining Co. of Chicago, contains an average of 24.21 per cent. of protein and 3.15 of fat.

The guaranty calls for 27.5 to 28.0 per cent. of protein and 3.0 of fat.

The guaranty of Chicago gluten is stated to refer to the *water-free meal*. To the feeder it is of no great importance to know what the feed would contain if there were no moisture in it, but it is of great importance to know what it contains as he finds it in market. There is no good reason why this information should not be given in the guaranty. A guaranty which does not give it is of no practical use to the purchaser.

A guaranty of 27.5 per cent. of protein *in the dry matter* would be equivalent to 24.8 per cent. of protein in goods with the average percentage of moisture in them. With this reduction, the protein in the samples examined is only 0.6 per cent. below guaranty. The writer has been verbally informed by a representative of the Commercial Products Co., that probably because of the greater amount of white corn in market this year and therefore necessarily used in their works, the percentage of protein in the feed has fallen unexpectedly. Five brands

of gluten feed, other than the Buffalo, have been analyzed and the average percentages of protein and fat in every brand are very considerably less than the respective guaranties.

No. 11150 K. K. Gluten Feed contains much less protein than is guaranteed. Another sample, sent soon after this sample was drawn, by R. G. Davis, New Haven, No. 11273, contained 23.69 per cent. of protein, 2.47 per cent. of fat.

A representative of J. E. Hubinger Bros. & Co., the manufacturers, stated that both samples were from the very first run of the new factory and he brought three samples stated to have been sampled by R. G. Davis from subsequent shipments.

The analyses of these three samples follow:

	11281	11282	11283
Water.....	7.05	6.88	6.68
Ash	1.02	0.99	1.04
Protein	24.25	24.06	25.38
Fiber	7.25	7.23	6.64
Nitrogen-free Extract....	56.02	56.46	56.18
Fat	4.41	4.38	4.08
	<hr/> 100.00	<hr/> 100.00	<hr/> 100.00

Four other samples of gluten products were sent by individuals, as follows:—

10151. "Gluten Meal," sent by C. H. Williams, Burnside, with the statement that it had injured stock which ate it. It contained 27.37 per cent. of protein but no poisonous substance was found. It is not gluten meal of average quality.

10555. Globe Gluten Feed, sent by Chapin & Co., from car shipped to I. W. Beers, Hamden, contained 24.00 per cent. of protein.

10271. Gluten Feed, manufacturer unknown, sent by G. W. Strant, South Manchester, contained 23.69 per cent. of protein.

11190. Sent by Andrew Kingsbury, R. D. Rockville, who states that it is sold by Rockville Milling Co. for \$26.00 per ton; bought for "Chicago Gluten Meal." The sample contained 23.00 per cent. of protein and 3.69 per cent. of fat;—less protein than the standard gluten feeds and far less than gluten meal. It is certainly not gluten meal. The factory where Chicago gluten meal was made was burned two years ago, and has not been replaced.

Hominy Meal, Hominy Chop.

Analyses on pages 46-49.

Of the twenty-seven samples examined, three are very inferior as shown by analysis. No. 11050, Star Hominy Meal, made by the Toledo Elevator Co., and sold by W. T. Reynolds, Poughkeepsie, contains an excess of corn cob. Nos. 11106, Star Hominy Chop and 11171, Mixed Hominy Chop,—both made by the Miner-Hillard Mill Co. of Wilkesbarre, are mixtures of corn and oat products. These three analyses are therefore excluded from the average.

Guaranties.

The law requires that hominy meal or chop shall be sold with a guaranty of composition.

Twelve of the twenty-seven samples examined were thus sold. The names of these brands, with their guaranties and composition as determined here, are as follows:

No.	Manufacturer or Dealer.	Protein.		Fat.	
		Found.	Guaranteed.	Found.	Guaranteed.
11013	American Hominy Co., Indianapolis	10.6	10.2	6.4	7.7
11093	Buffalo Cereal Co., Buffalo....	10.3	10.5	8.4	8.5
11043	C. M. Cox Co., Boston	10.4	10.0	8.0	7.0
11057	Chapin & Co., Boston	10.1	11.0	6.4	8.0
11125	" " "	10.8	11.0	9.2	8.0
11163	" " "	10.4	11.0	7.9	8.0
11171	Miner-Hillard Mill Co., Wilkesbarre.....	8.8	9.8	3.9	6.7
11032	Miner-Hillard Mill Co., Wilkesbarre, (steam cooked).....	10.0	12.0	6.8	9.0
11067	Miner-Hillard Mill Co., Wilkesbarre, (steam cooked).....	10.1	12.0	7.0	9.0
10942	Soper & Co., Boston, Blue Ribbon	10.5	11.4	7.7	9.3
11103	Suffert, Hunt & Co., Decatur..	10.1	11.0	8.1	7.7
10966	Patent Cereal Co., Geneva, N. Y.	10.6	11.5	8.8	9.3

The percentages of protein in seven of these samples are a good deal lower than the guaranteed percentages.

As in the case of most of the feeds already discussed, hominy meal contains much less protein and fat this year than was found last year. The average percentages of protein and fat for a number of years have been as follows:—

	1903	1902	1901	1900
No. of analyses.....	24	26	21	10
Protein, per cent.....	10.49	11.57	11.35	11.67
Fat, per cent.....	7.85	8.91	8.54	8.71
Cost per ton.....	\$24.28	28.25	24.45	19.95

A ton of mixed wheat feed contains two hundred and sixty-six pounds of *digestible* protein and seventy-eight pounds of *digestible* fat. A ton of hominy feed contains one hundred and forty-two pounds of *digestible* protein and one hundred and forty-four pounds of *digestible* fat, but cost seventy-three cents a ton more than wheat feed. Yet it has a large sale in this state among dairymen who are trying to make the business pay!

A considerable number of samples of hominy meal have been sent in by individuals for analysis as follows:—

10064. Bought from Coles & Co., Middletown, for \$25.00 per ton and sent by H. B. Cornwall of Portland. It contains 10.37 per cent. of protein and is therefore of good quality.

10065. Bought from Herman L. Buss, Boston, for \$21.80 per ton in car lots of twenty tons, by H. B. Cornwall, Portland. It contains 10.19 per cent. of protein and is of fair quality.

10067. Sent by Mrs. I. F. Barnard, North Haven, who states that it was bought for white hominy meal of the Coöperative Feed Co., North Haven, and that one horse nearly died of colic after eating it and others refused to eat it. The sample contains more protein than hominy meal contains, 13.31 per cent., but nothing was found to explain the injurious effects noted above.

10544. Sent by Joseph Delehanty, Southington, stated to be Niagara White Meal from Chapin & Co., contains 10.87 per cent. of protein and 7.65 per cent. of fat.

Two samples of Star Hominy, made by the Toledo Elevator Co., Toledo, Ohio, and sold through W. T. Reynolds & Co., Poughkeepsie, were received for analysis.

11206 was sent by J. H. Crowley, Canton Center, who states that he bought it of the Collinsville Grain Co., who stated to him that it came from F. W. Konold of Collinsville.

11214 was sent by L. M. Bristol, Canton Center, who states that it was bought of F. W. Konold. Mr. Konold advises us that it was bought of W. T. Reynolds, Poughkeepsie with a statement of composition of 11.40 per cent. of protein and 7.31 per cent. of fat. The analyses of these samples are as follows:—

	11206	11214
Protein	8.37	8.62
Fiber	10.19	10.41
Fat	6.33	6.46

RYE BRAN, RYE FEED.

Analyses on pages 50-51.

The nine samples represented in the tables are of good quality, free from adulteration and of the usual composition.

MALT SPROUTS, BARLEY SPROUTS.

Analyses on pages 50-51.

Four samples are represented in the table. Three are of good quality and have the usual composition. One of them, 11165, from Hollister, Chase & Co. of New York, sold by Scofield & Miller of Stamford, is distinctly inferior, containing only half the usual percentage of protein. It is also a dirty product, as appears from the high percentage of ash and also from microscopic examination.

It is therefore excluded from the average.

DISTILLERS GRAINS.

Analyses on pages 50-51.

Three of the samples represented in the table are sold under the name of Ajax Flakes ("Manhattan Gluten") by Chapin & Co., Boston. With these is included one sample of Hall's AAAA Distillers Grains having similar composition. All of them are corn products, a dried residue from the manufacture of alcohol. Two samples of the Ajax Flakes and the sample of Hall's Distillers Grains are below their guaranteed composition.

OAT PRODUCTS.

Ground Oats.

Analyses on pages 50-51.

The two samples of ground oats examined are of average quality and free from adulteration.

The price is, however, prohibitive for use as a dairy food.

Oat Feeds.

Analyses on pages 50-53.

These "feeds" are offered for a few dollars less per ton than such standard articles as wheat feeds. Some of them are little

more valuable than oat chaff, which, sold under its true name, can be bought for from \$7 to \$10 per ton. Their analyses are summarized below and compared with oat chaff. No guaranties of composition are given with these goods, as is required by law.

	Water.	Ash.	Protein.	Fiber.	Nitrogen-free Extract.	Ether Extract.
Oat Chaff	7.8	7.5	5.1	28.5	49.5	1.6
"Victor" Oat Feed	9.7	4.3	9.2	17.1	56.7	3.0
"Royal" "	8.1	6.3	6.2	25.2	52.4	1.8
"Vim" "	9.5	5.3	7.7	22.8	52.0	2.7
Cox's "	6.7	5.6	6.6	24.2	53.3	3.6
Pillsbury's "	8.1	6.9	7.1	24.8	51.1	2.0

These oat feeds cost from \$16 to \$23 per ton, an average of about \$19.50. Taking the average composition of the five brands, it appears that a ton of oat feed, such as is now offered and sold in Connecticut in large quantity, contains the amounts of food ingredients given below.

There is also given, for comparison, the amounts of food ingredients which can be bought *for the same money* in mixed spring wheat feed.

	A ton of average Oat Feed, costing \$19.50, contains pounds.	Mixed Wheat Feed, costing \$19.50, contains pounds.
Protein	147	281
Fiber	456	136
Nitrogen-free Extract	1062	894
Fat	52	82

Dollar for dollar, the feeder gets nearly twice as much protein,—the *only* thing which he really needs to buy to piece out his home-grown feeds—in wheat feed, a standard article, than he gets in oat feed, the refuse from oat meal factories. Yet a great deal of oat feed is sold in the state and dairying—with some farmers—"doesn't pay."

MISCELLANEOUS MIXED FEEDS.

Provender.

Analyses on pages 52-53.

The three samples analyzed are of the usual quality.

Corn and Oat Feed.

Analyses on pages 52-55.

"Victor," "XXX," "De-Fi" and "Boss" Corn and Oat Feeds are all mixtures of corn and oat products: the "XXX" and "De-Fi" brands also contain some wheat product. All meet

the guaranties of their manufacturers and all contain less protein and considerably more fiber than mixtures of good corn and oats contain.

Schumacher's Stock Feed

Analyses on pages 54-55.

Is a mixture of corn, oat and barley products which contains lower percentages of protein and fat than are guaranteed.

Proprietary Horse Feeds.

Analyses on pages 54-55.

Blomo Feed is a mixture of beet molasses, blood and oat hulls, which practically meets the guaranty of the manufacturer.

Buffalo Cereal Co.'s Horse Feed

Analyses on pages 54-55.

Consists of coarsely ground corn, oat and wheat products with a little linseed meal, and meets its guaranty.

H. O. Horse Feed

Analyses on pages 54-55.

Contains coarsely ground corn, oat and wheat and peanut products and meets its guaranty.

Molasses Feed for Horses

Analyses on pages 54-55.

Consists chiefly of malt sprouts, brewers grains and molasses and contains much less protein than is guaranteed.

The prices of these ready mixed feeds, ranging from \$20 to \$30 per ton, are quite out of proportion to their feeding value.

POULTRY FEEDS.

Analyses on pages 54-57.

The analyses of a number of poultry feeds of vegetable nature as well as of beef scrap and bone and meat meal appear in the table, but do not call for more particular notice.

The vegetable feeds are mixtures of corn, oat and wheat products; linseed meal, cotton seed meal and peanuts are found in some of them.

PROPRIETARY DAIRY AND STOCK FEEDS.

Analyses on pages 56-59.

Here are included eight brands of mixed feeds. Dickinson's Stock Feed, Haskill's Stock Feed, Lenox Stock Feed and Blatchford's Calf Meal do not fully meet the guaranties of the manufacturers.

The Quaker Dairy Feed, made by the American Cereal Co., consists of a mixture of wheat, oat and corn products and cotton seed meal, containing 14.4 per cent. of protein and more than the guaranteed amount.

The Buffalo Cereal Co.'s Dairy Feed is a mixture consisting chiefly of oat and corn products with some wheat product and contains more than the guaranteed amount of protein.

The Creamery Feed of the same company is stated by a representative of the company to be a mixture of cotton seed, hominy, gluten, corn, oats and linseed. This brand contains 20 per cent. of protein as guaranteed.

The H. O. Dairy Feed consists of oat, wheat and corn products, with some cotton seed meal and peanuts.

Blatchford's Calf Meal contains a wheat product, linseed meal, cotton seed meal, carob beans, common beans and fenugreek.

Dickinson's, Haskill's and Lenox Stock Feed consist wholly of corn and oats and contains less protein than either corn or oats of good quality.

The most concentrated of these mixtures contains 24.6 per cent. of protein and the others range between 20.06 and 7.81 per cent. of protein. The prices range from \$21.00 to \$70.00 per ton, or excluding Blatchford's Calf Meal from \$21 to \$28.00 per ton.

A mixture of 1000 pounds of gluten feed and 1000 pounds of mixed wheat feed made at home would cost at present retail prices \$24.76. It would contain a good deal more protein than could be bought for the same money in any of these factory-mixed feeds and would have a higher feeding value. It would also have this added advantage, that the feeder would know exactly what his animals were eating.

In other words, the cost of most of these factory-mixed feeds is quite out of proportion to their feeding value.

BUCKWHEAT MIDLINGS.

A single sample, made at the Quinnebaug Mills, Danielson, contains 29.06 per cent. of protein and sells for \$22.00 per ton.

"GROUND OIL CAKE COMPOUND."

"Gee's Ground Oil Cake" is not ground oil cake. It consists largely of wheat and weed seeds (black'bindweed, foxtail, charcoal, linseed), refuse from the screening of wheat.

CONDIMENTAL OR MEDICINAL CATTLE FOODS.

Two samples have been examined. 9909, Sheriden's Condition Powders, sent by F. B. Munson of North Haven, contains linseed meal, charcoal, epsom salts, carbonate of lime, red pepper, ginger, sulphur and probably other constituents.

10152. Pepto Stock Food, made by the Banner Food Co., Auburn, N. Y., contains 23.62 per cent. of protein, being a mixture of linseed meal, wheat middlings, charcoal, fenugreek and salt.

THE DIGESTIBILITY OF FEEDING STUFFS.

A certain part of every feeding stuff is indigestible and passes through the body into the dung without doing anything to sustain the animal. The value of a commercial feed rests wholly in that portion of it which the animal can, under favorable conditions, digest or appropriate and make a part of itself. Some animals have greater power of digestion than others, and the amount of any ingredient, protein, fat or fiber, digested by a given animal depends much on the proportion of other ingredients which are fed along with it. Thus, if starchy matter is fed in too large proportion, a considerable part of it will pass into the dung and be wasted. But fed in proper fashion over 90 per cent. of it may be taken up by the body and nourish it.

Table I gives the "digestion coefficients" of most of the feeds mentioned in Table IV.

The digestion coefficient of protein, for example, in cotton seed meal is 88. This means that in a properly made ration, neat cattle, in good health, may be expected, on the average, to digest about 88 parts out of every 100 parts of the protein of cotton seed meal of good quality. The table has no great

mathematical precision, but is, nevertheless, a valuable general guide in feeding.

The use of the table is quite simple. Suppose analysis shows a certain sample of cotton seed meal to contain 43.5 per cent. of protein; that is, 43.5 pounds of protein in 100 pounds of the meal. It is desired to know how much *digestible* protein is contained in 100 pounds of meal. The table of "digestion coefficients" shows that of every 100 pounds of crude protein in cotton seed meal 88 pounds are digestible. It follows by the rule of three (100 is to 88 as 43.5 is to 38.28), that of the 43.5 pounds of protein 38.28 pounds are digestible. To apply the table, multiply the percentage found on analysis by the proper coefficient taken from the table and divide the product by 100. The result will be the percentage amount of *digestible* protein, fiber, etc., as the case may be.

In Table IV, under the averages of analyses, will be found calculated the average digestible nutrients contained in the different feeding stuffs, so far as the data at hand permit.

TABLE I.—DIGESTION COEFFICIENTS, OR PERCENTAGES OF THE FOOD INGREDIENTS, FOUND BY ANALYSES, WHICH ARE DIGESTIBLE BY NEAT CATTLE.

(Jordan's Compilation, Office of Experiment Stations, Bulletin 77.)

	Protein.	Fiber.	Nitrogen-free Extract.	Fat.
Cotton Seed Meal	88	56	62	93
Linseed Meal, new process..	85	80	86	97
Linseed Meal, old process..	89	57	78	89
Corn Meal	68	--	95	92
Gluten Meal	88	--	90	94
Gluten Feed	86	78	89	84
Wheat Bran	78	29	69	68
Wheat Middlings	80	33	81	86
Wheat Mixed Feed	80	25	78	78
Oats*	78	20	76	83
Rye Meal	84	--	92	64
Malt Sprouts	80	33	68	100
Dried Brewers Grains	79	52	58	91
H. O. Dairy Feed	78	41	70	86
H. O. Horse Feed	74	35	79	84
Quaker Oat Feed	81	43	67	89
Quaker Dairy Feed†	78	41	70	86
Victor Corn and Oat Feed‡	71	48	83	87

* Mentzel and Lengerke.

† Assumed same as H. O. Dairy Feed.

‡ Assumed for all other corn and oat feeds.

REGARDING THE PURCHASE OF COMMERCIAL FEEDING-STUFFS.

It needs to be constantly borne in mind that feeding-stuffs are bought to supply a deficiency of protein in those which are usually raised on the farm.

Hay, corn fodder, ensilage and stover form the basis and make up the bulk of the cattle food and should supply all the coarse feed, as well as most of the starch, sugar and fat which are needed.

They are, however, deficient in protein. The feeder's aim then is, or should be, to buy *digestible protein* at as low a price as he can, in forms relished by his stock. He is not in the market to buy mixtures of cattle medicine and food, nor starchy foods, nor woody fiber, nor the many wastes of factories, where so-called "breakfast goods" for human use are made.

It will very rarely pay him to buy anything which contains as little protein as corn meal. Corn meal he can generally raise much more cheaply than he can buy it—and corn meal fed with hay or ensilage needs the addition of some feed *richer in protein*, in order to avoid waste of starchy matter in feeding.

Table II is a list of the commercial feeding-stuffs mentioned in this Bulletin, which are used in feeding cows, with the percentages of protein and fat in these feeds, and their average prices, arranged according to the per cent. of protein, the ingredient with which the buyer is chiefly concerned. The table is a practical summary of the analyses to be given in Table IV and deserves careful study.

In this table the average price given with the average composition of each feed is not in most cases the average of the prices quoted by dealers, as these do not in all cases represent ruling market rates. The average price per ton given in Table II is calculated from the market quotations of the week ending January 24th, 1904—for such articles as are quoted in the market reports—by adding in each case \$2.00, which represents the average difference between ton and car-lot prices.

This therefore, quite accurately represents the condition of the feed market at the date named and affords a better basis for comparing the prices of feeds than an average of retailers'

quotations made at various dates extending over four months' time.

The table shows that we have six distinct groups of feeding-stuffs:

1. Cotton seed meal with over 40 per cent. of protein and costing \$28.50 per ton on the average.
2. Linseed and gluten meal and dried distillers grains containing between 30 and 40 per cent. of protein, the prices ranging from \$25.75 to \$32.00 per ton.
3. Most of the gluten feeds, malt sprouts, buckwheat middlings and Buffalo Cereal Co.'s Creamery Feed, containing from 20 to 30 per cent. of protein, prices ranging from \$20.00 to \$27.50 per ton.
4. The wheat feeds, H. O. Dairy Feed, and rye feed, having between 15 and 20 per cent. of protein and costing from \$21.25 to \$28.00 per ton.
5. Lower grade feeds, containing from 14.5 to 10 per cent. of protein, which the feeder of dairy stock need not consider at all in buying protein to balance a ration made up of home-grown fodder, if he has home-grown shelled corn at his disposal. The prices range from \$23.75 to \$26.00 per ton.
6. Oat refuse and mixtures of corn and oat refuse, containing even less than 10 per cent. of protein but costing from \$14.50 to \$26.00 per ton.

TABLE II.—COMMERCIAL FEEDS NOW IN THE CONNECTICUT MARKET
ARRANGED ACCORDING TO THE PERCENTAGES OF PROTEIN IN THEM.

<i>With more than 40 per cent. of Protein.</i>	Protein per cent.	Fat per cent.	Cost per ton
Cotton Seed Meal	43.16	9.22	\$28.50
<i>With 30 to 40 per cent. of Protein.</i>			
Cream Gluten	37.06	3.27	32.00
Linseed Meal, New Process	36.35	3.17	25.75
" " Old Process	33.05	7.51	26.25
Dried Distillers Grains	32.23	12.09	27.50
<i>With 20 to 30 per cent. of Protein.</i>			
Buckwheat Middlings	29.06	7.77	22.00
Barley Sprouts	27.25	1.56	20.00
Various Gluten Feeds	24.43	3.16	27.50
Buffalo Cereal Co.'s Creamery Feed....	20.06	5.38	27.00

With 15 to 20 per cent. of Protein.

	Protein per cent.	Fat per cent.	Cost per ton.
Spring Wheat Middlings.....	17.88	4.98	23.50
H. O. Dairy Feed	17.49	4.53	28.00
Spring Mixed Feed	16.96	4.96	25.00
Winter Mixed Feed	16.67	4.53	25.00
Winter Wheat Middlings.....	16.41	4.54	23.50
Spring Wheat Bran.....	15.85	4.88	23.50
Rye Feed	15.57	3.02	21.25
Winter Wheat Bran.....	15.52	4.49	24.00

With 10 to 15 per cent. of Protein.

Buffalo Cereal Co.'s Dairy Feed.....	14.44	4.69	25.00
Quaker Dairy Feed	14.42	4.05	24.00
Schumacher Stock Feed	11.87	4.69	27.00
Provender	10.62	4.03	23.75
Hominy Feed	10.49	7.85	24.75

With less than 10 per cent. of Protein.

XXX Corn and Oat Feed.....	9.66	5.09	25.50
Victor Oat Feed.....	9.19	3.03	20.00
Lenox Feed.....	9.06	4.48	23.50
Haskell's Stock Feed	8.87	5.80	24.00
Victor Corn and Oat Feed	8.83	4.02	23.50
De-Fi Corn and Oat Feed	8.81	2.90	27.25
Corn Meal	8.73	3.47	23.50
Boss Corn and Oat Feed	8.66	4.57	24.50
Durham Corn and Oat Feed	8.25	4.30	24.00
Dickinson's Stock Feed.....	7.81	4.30	22.00
Vim Oat Feed	7.69	2.67	14.50
Pillsbury's Oat Feed	7.06	1.98	23.00
Cox's Oat Feed.....	6.64	3.60	17.00
Royal Oat Feed.....	6.19	1.75	20.00

It will also be noticed that the percentages of fat in these feeds are not very unlike. If we except cotton seed meal, old process linseed meal, dried distillers grains, buckwheat middlings and hominy feed, the percentages of fat all fall between 1.6 and 5.8.

It is therefore possible to make a rough comparison of the feeds *taking account of protein alone*, as that is the ingredient which the feeder is chiefly concerned in getting in commercial feeds. Such a comparison shows the following:—

If 20 pounds of Protein in Cotton Seed Meal costs.....	\$0.66
Then 20 pounds of Protein in Barley Sprouts, Buckwheat Middlings and Linseed Meal, old or new process, costs.....	.70-.80
“ “ Cream Gluten and Dried Distillers' Grains costs .....	.80-.90
“ “ Gluten Feeds costs	1.00-1.25
“ “ Spring Wheat Bran, Winter and Spring Wheat Middlings, Winter and Spring Mixed Feed, Buffalo Cereal Creamery Feed and Rye Feed costs.....	1.25-1.50
“ “ Winter Wheat Bran, H. O. Dairy Feed, Quaker Dairy Feed, Buffalo Cereal Co.'s Dairy Feed, costs ...	1.50-1.75
“ “ Vim Oat Feed costs.....	1.75-2.00
“ “ Various Oat, and Corn and Oat Feeds and a number of so-called Stock Feeds range in price from...	2.00-3.25

The above is a rough but fair statement of the *comparative* cost of protein in these various feeds. No consideration is given to the amounts of starch, sugar and fiber contained in them. These last have a necessary part in the ration, but they are not things which the average dairyman can at all afford to buy, except incidentally, in feeds costing \$20 or more per ton. They are things which he can raise cheaply and abundantly on his own farm and must raise rather than buy them to succeed in his business. They come from the air and from the water of the soil and air and do not exhaust the fertility of his land. Protein, on the other hand, is not so easily and abundantly produced in his crops, in concentrated forms, it takes from the land the most expensive and least abundant element of plant food, and its purchase brings to the farm not only the element needed to balance the home-grown feeds in the ration, but also the element which, as a rule, his land most lacks.

The table shows that in feeds containing 15 or more per cent. of protein he buys the latter at prices ranging from 66 cents to \$1.75 per "unit," i. e. twenty pounds. In the feeds having less than 15 per cent. of protein he pays from \$1.50 to \$3.25 for protein and gets it in a form in which it cannot be fed as economically. That large quantities of these low grade feeds are

bought and used in Connecticut shows, of itself, that money is lost in the dairy business which could be saved by a little study of the way to use commercial feeding stuffs.

THE WEIGHT OF ONE QUART OF VARIOUS FEED- ING-STUFFS.

The following table gives the weight of one quart of the feeds named, and is useful to calculate the weight of grain ration fed, from the measure which is almost universally used on farms.

This table was prepared by Mr. H. G. Manchester of West Winsted.

TABLE III.—THE AVERAGE WEIGHT OF ONE QUART OF EACH OF THE FEEDS NAMED.

BY H. G. MANCHESTER, WEST WINSTED.

	Pounds.
Cotton Seed Meal.....	1.5
Linseed Meal, old process.....	1.1
Linseed Meal, new process.....	0.9
Gluten Meal.....	1.7
Gluten Feed.....	1.2
Distillers Grains.....	0.7
Wheat Bran, coarse.....	0.5
Wheat Middlings, coarse.....	0.8
Wheat Middlings, fine.....	1.1
Mixed Wheat Feed.....	0.6
Corn Meal.....	1.5
Hominy Meal.....	1.3
Provender.....	1.5
Oats.....	1.2
Rye Bran.....	0.6
H. O. Dairy Feed.....	0.7
Victor Corn and Oat Feed.....	0.7

TABLE IV.—ANALYSES OF COMMERCIAL FEEDS.


Station No.	Name of Feed.	Manufacturer or Jobber.	Retail Dealer.
	<i>Cotton Seed Meal.</i>		
11139	A B C brand	The Augusta Brokerage Co., Augusta, Ga.	Suffield, Spencer Bros.
11042	.....	American Cereal Co., Chicago	Southington, Southington Lumber and Feed Co.
11076	England Mill	American Cotton Oil Co., New York	Wallingford, E. E. Hall ...
11051	Jackson Mill	American Cotton Oil Co., New York	Collinsville, F. W. Konold
10969	Trenton, Tenn. Mill	American Cotton Oil Co., New York	Jewett City, J. E. Leonard & Son
10958	.....	R. W. Biggs, Memphis, Tenn.	Yantic, A. R. Manning & Co.
10984	Canary brand	R. W. Biggs, Memphis, Tenn.	New Haven, R. G. Davis..
11089	" "	R. W. Biggs & Co., Memphis, Tenn.	Hamden, Ira W. Beers ...
11105	Dixie brand	Humphreys, Godwin & Co., Memphis, Tenn.	Berlin, J. C. Lincoln.....
10957	Green Diamond brand	Chapin & Co., St. Louis, Mo.	Yantic, A. R. Manning & Co.
11019	" "	Chapin & Co., St. Louis, Mo.	New Haven, Abner Hendee
11062	" "	Chapin & Co., St. Louis, Mo.	Bristol, Geo. W. Eaton
11131	" "	Chapin & Co., St. Louis, Mo.	Hartford, Smith, Northam & Co.
10983	H. & H. brand*	Hayley & Hoskins, Memphis, Tenn.	Putnam, Bosworth Bros. ...
11135	.....	Hunter Bros., St. Louis, Mo.	Hartford, Daniels Mill Co.
11045	Magnolia brand	Chas. M. Cox Co., Boston	Plainville, F. B. Newton ..
11056	" "	Chas. M. Cox Co., Boston	Collinsville, Collinsville Grain Co.
10949	Old Gold brand	T. H. Bunch, Little Rock, Ark.	New London, Arnold Rudd & Co.
10950	.....	Planters Cotton Oil Co., Montgomery, Ala.	New London, E. H. Caulkins
11108	.....	J. E. Soper & Co., Boston	New Britain, The C. W. Lines Co.
10945	Star brand	Sledge & Wells Co., Memphis, Tenn.	Groton, Groton Grain Co..
10948	"	Sledge & Wells Co., Memphis, Tenn.	New London, Arnold Rudd & Co.
11155	Sunflower brand	J. G. Falls & Co., Memphis, Tenn.	Willimantic, H. A. Bugbee
11074	" "	American Cereal Co., Chicago	Wallingford, E. E. Hall ...
11227	" "	American Cereal Co., Chicago	Waterbury, The Platt Mill Co.
			Average of the 25 analyses.
			Average digestible

* See note, page 8.

SAMPLED IN 1903.

Station No.	ANALYSES.						Price per ton.
	Water.	Ash.	Protein.	Fiber.	Nitrogen-free Extract. (Starch, gum, etc.)	Ether Extract.	
11139	8.80	6.13	41.69	7.74	27.07	8.57	\$29.00
11042	10.39	6.05	41.44	7.99	26.34	7.79	29.00
11076	10.50	7.31	41.50	8.18	23.33	9.18	28.00
11051	10.35	6.63	45.25	5.30	23.17	9.30	30.00
10969	9.43	7.25	47.12	4.92	22.65	8.63	29.00
10958	9.33	5.90	42.12	8.41	26.80	7.44	28.00
10984	9.32	7.30	41.12	8.34	22.60	11.32	28.00
11089	9.25	7.21	42.50	6.82	23.52	10.70	29.00
11105	9.80	6.93	42.69	7.52	24.16	8.90	30.00
10957	9.83	6.75	46.25	5.30	23.22	8.65	28.00
11019	9.21	6.07	41.94	7.45	26.50	8.83	30.00
11062	9.48	7.50	46.75	4.51	23.02	8.74	29.00
11131	7.02	6.11	41.87	8.60	28.07	8.33	29.00
10983	8.22	6.92	37.50	9.89	24.50	12.97	29.00
11135	7.70	7.62	45.06	5.71	22.63	11.28	29.00
11045	10.13	6.22	44.25	5.87	23.74	9.79	30.00
11056	10.15	5.97	45.44	6.25	23.82	8.37	30.00
10949	8.94	7.68	43.62	5.52	24.46	9.78	29.00
10950	8.98	6.18	48.19	5.54	22.46	8.65	29.00
11108	10.02	7.10	45.56	5.68	23.79	7.85	29.00
10945	9.42	7.27	44.50	5.26	22.68	10.87	30.00
10948	9.47	5.85	42.12	8.36	25.89	8.31	29.00
11155	9.45	5.66	41.87	8.02	25.88	9.12	29.00
11074	10.46	5.63	38.56	9.67	26.54	9.14	29.00
11227	8.79	5.79	40.31	9.33	27.64	8.14	28.00
	9.38	6.60	43.16	7.05	24.59	9.22	29.04
			37.98	3.95	15.00	8.57	

TABLE IV.—*Continued.* ANALYSES OF COMMERCIAL FEEDS.

Station No.	Name of Feed.	Manufacturer or Jobber.	Retail Dealer.
10952	<i>Linseed Meal, New Process.</i> Cleveland Flaxmeal	American Linseed Co., Chicago, Ill.	Yantic, A. R. Manning & Co.
11017	Linseed Meal	American Linseed Co., Chicago, Ill.	Guilford, F. H. Rolf
			Guaranty
			Average of these 2 analyses
			Average digestible
10990	<i>Linseed Meal, Old Process.</i>	American Linseed Co., New York	New Haven, R. G. Davis..
11022	.....	American Linseed Co., New York	New Haven, Abner Hendee
11241	Export brand	Chapin & Co., Boston	Torrington, E. H. Talcott..
10937	Green Oval brand	Flint Mill Co., Milwaukee	So. Norwalk, M. T. Hatch..
10951	.....	Hauenstein & Co., Buffalo, N. Y.	New London, E. H. Caulkins
11117	.....	Hunter Bros., St. Louis, Mo.	New Britain, Hugh Reynolds
11133	.....	Metzger Seed and Oil Co., Toledo, Ohio	Hartford, Smith, Northam & Co. ..
11070	.....	Midland Linseed Co., Minneapolis	Bristol, W. O. Goodsell...
11172	Ground Linseed Cake....	Midland Linseed Co., Minneapolis	Bridgeport, Wm. M. Terry & Co.
			Average of these 9 analyses
			Average digestible
	WHEAT PRODUCTS.		
	<i>Bran from Winter Wheat.</i>		
11004	Bran	American Cereal Co., Chicago	Branford, S. V. Osborn ...
11016	"	American Cereal Co., Chicago	Guilford, F. H. Rolf
10947	" 	Chapin & Co., Boston	New London, Beebe & Bragaw
11087	"	James Goldie Co., Canada	Hamden, Ira W. Beers
11038	"	Hecker-Jones-Jewell Mill- ing Co., N. Y.	Southington, Southington Lumber & Feed Co.
10996	" Kansas "C"		New Haven, The J. T. Benham Est. ...
10972	" U. S. A.		Danielson, Waldo Bros. ...
			Average of the 6 analyses*
			Average digestible
	<i>Bran from Spring Wheat.</i>		
10964	Bran	Bay State Mill Co., Winona, Minn.	Norwich, A. A. Beckwith ..
11086	"	Cataract Milling Co., Niagara Falls	Hamden, Ira W. Beers.
11182	"	L. Christian & Co., Minneapolis	Derby, Peterson-Hendee Co.
11236	"	J. G. Davis & Co., Rochester, N. Y.	Winsted, Balch & Platt ...

* Excluding 11087.

SAMPLED IN 1903.

Station No.	ANALYSES.						Price per ton.
	Water.	Ash.	Protein.	Fiber.	Nitrogen-free Extract. (Starch, gum, etc.)	Ether Extract.	
10952	10.18	5.22	36.44	8.73	36.15	3.28	\$30.00
11017	11.04	5.09	36.25	9.17	35.38	3.07	35.00
	-----	-----	37.5	-----	-----	1.0	-----
	10.61	5.15	36.35	8.95	35.77	3.17	32.50
	-----	-----	30.90	7.16	30.76	3.07	-----
10990	11.56	5.12	32.37	8.73	34.90	7.32	27.00
11022	11.21	5.36	33.50	8.81	34.12	7.00	35.00
11241	9.68	5.82	31.44	9.26	36.56	7.24	32.00
10937	10.25	4.86	36.56	7.68	33.34	7.31	34.00
10951	11.19	4.77	34.06	7.94	34.98	7.06	28.00
11117	10.95	5.12	31.19	9.42	35.89	7.43	30.00
11133	10.85	4.96	31.75	9.12	36.07	7.25	31.00
11070	10.52	4.92	33.94	8.24	33.89	8.49	30.00
11172	9.61	5.53	32.62	8.01	35.70	8.53	30.00
	10.65	5.16	33.05	8.58	35.05	7.51	30.77
	-----	-----	29.41	4.89	27.34	6.68	-----
11004	11.20	5.90	14.81	7.84	55.81	4.44	23.00
11016	11.20	5.98	16.87	7.49	53.56	4.90	23.00
10947	10.72	5.84	15.69	9.61	53.15	4.99	23.00
11087	11.84	5.89	12.81	10.10	55.15	4.21	23.00
11038	11.47	6.68	15.06	10.19	52.31	4.29	23.00
10996	10.85	6.66	15.56	9.19	53.61	4.13	-----
10972	10.70	5.91	15.12	7.92	55.86	4.49	-----
	11.14	6.12	15.52	8.91	54.21	4.49	23.00
	-----	-----	12.10	2.58	37.40	3.05	-----
10964	10.53	6.99	16.06	10.54	51.15	4.73	24.00
11086	11.30	5.62	16.25	9.09	52.54	5.20	21.00
11182	10.31	5.85	16.25	9.70	53.00	4.89	23.00
11236	9.98	5.55	16.12	9.50	53.66	5.19	24.00

TABLE IV.—*Continued.* ANALYSES OF COMMERCIAL FEEDS.

Station No.	Name of Feed.	Manufacturer or Jobber.	Retail Dealer.
	<i>Bran from Spring Wheat.</i>		
11090	Bran, Clover Leaf	Gardner Mill, Hastings, Minn.	Meriden, S. A. Billings....
10974	" Commander	Gregory, Cook & Co., Duluth, Minn.	Danielson, Young Bros. Co.
11099	" Duluth Imperial	Imperial Milling Co., Duluth, Minn.	Meriden, A. H. Cashen ...
10995	" Independence	New York Milling Co., New York	New Haven, J. T. Benham Est.
11009	" Superior	Lake Superior Mills, Superior, Wis.	Guilford, Geo. F. Walter...
10953	"	Missouri Valley Milling Co., Mandan, No. Dak.	Yantic, A. R. Manning & Co. ...
11034	"	The Northwestern Con. Milling Co., Minneapolis	Plantsville, T. B. Atwater.
11109	"	Pillsbury, Minneapolis, Minn.	New Britain, C. W. Lines Co.
11143	"	Pillsbury, Minneapolis, Minn.	Suffield, Arthur Sikes
11119	"	Porter Milling Co., Winona, Minn.	East Hartford, G. M. White & Co.
11041	"	Washburn-Crosby Co., Minneapolis, Minn.	Southington, Southington Lumber & Feed Co.
11178	" Jersey	Geo. C. Christian, Minneapolis, Minn.	Bridgeport, Berkshire Mills
			Average of these 16 analyses
			Average digestible
	<i>Middlings, Winter Wheat.</i>		
11005	Middlings	American Cereal Co., Chicago	Branford, S. V. Osborn ...
11015	"	American Cereal Co., Chicago	Guilford, F. H. Rolf
10954	"	C. M. Cox Co., Boston	Yantic, A. R. Manning & Co. ...
10962	"	J. Hale & Co., Lyons, Mich.	Norwich, A. A. Beckwith..
10999	" H	Hecker-Jones-Jewell Co., New York	East Haven, Hawkins & Forbes
11039	" H	Hecker-Jones-Jewell Co., New York	Southington, Southington Lumber & Feed Co.
11020	" M	Hecker-Jones-Jewell Co., New York	New Haven, Abner Hendee
11083	" M	Hecker-Jones-Jewell Co., New York	North Haven, Co-op. Feed Co.
10961	"	A. H. Randall Mill Co., Tekonsha, Mich.	Norwich, Norwich Grain Co.
10992	"	F. Thoman & Bro., Lansing, Mich.	New Haven, R. G. Davis..
10973	" U. S. A.		Danielson, Waldo Bros. ...
11247	" T		Litchfield, Marsh & Newcomb
			Average of these 12* analy- ses
			Average digestible

* Excluding No. 10961.

SAMPLED IN 1903.

Station No.	ANALYSES.						Price per ton.
	Water.	Ash.	Protein.	Fiber.	Nitrogen-free Extract. (Starch, gum, etc.)	Ether Extract.	
11090	10.42	6.94	15.12	11.46	51.66	4.40	\$24.00
10974	10.33	6.63	15.44	11.30	51.30	5.00	22.00
11099	10.95	5.76	16.00	9.12	53.12	5.05	23.00
10995	12.24	6.68	15.25	9.44	52.61	3.78	23.00
11009	11.12	5.18	16.87	8.32	53.43	5.08	21.00
10953	10.60	5.85	16.44	8.96	52.52	5.63	21.00
11034	11.50	6.65	15.37	11.00	50.73	4.75	24.00
11109	10.57	6.72	15.69	11.25	50.85	4.92	22.00
11143	11.05	5.94	15.62	9.82	52.52	5.05	21.00
11119	10.10	6.70	15.87	10.84	51.64	4.85	21.00
11041	11.35	6.22	16.00	10.60	51.23	4.60	22.00
11178	9.38	6.88	15.25	12.20	51.30	4.99	24.00
	10.74	6.26	15.85	10.19	52.08	4.88	22.50
	----	----	12.36	2.96	35.94	3.32	----
11005	11.97	4.47	16.37	5.90	56.29	5.00	27.00
11015	11.33	2.41	16.50	2.58	63.53	3.65	29.00
10954	11.29	3.87	17.94	4.78	57.41	4.71	27.00
10962	12.66	3.10	15.31	3.19	61.69	4.05	27.00
10999	11.02	5.47	16.44	7.42	55.02	4.63	21.00
11039	9.97	5.05	16.37	8.96	54.96	4.69	23.00
11020	10.05	4.85	16.12	9.14	55.31	4.53	27.00
11083	11.38	4.66	16.44	7.76	55.63	4.13	24.00
10961	12.18	2.79	12.62	3.32	65.20	3.89	27.00
10992	12.94	3.10	15.19	3.49	61.08	4.20	25.00
10973	11.73	4.37	15.87	5.40	57.59	5.04	----
11247	9.85	4.93	18.00	7.24	54.68	5.30	25.00
	11.29	4.21	16.41	5.99	57.56	4.54	25.55
	----	----	13.13	1.98	46.62	3.90	----

TABLE IV.—*Continued.* ANALYSES OF COMMERCIAL FEEDS.

Station No.	Name of Feed.	Manufacturer or Jobber.	Retail Dealer.
	<i>Middlings, unclassified.</i>		
11044	Middlings	Caledonia, N. Y.	Plainville, F. B. Newton..
10943	"	C. W. Campbell & Co., Westerly, R. I.	Stonington, S. H. Chesebro
11073	" White Mountain Cream	G. E. Gee Grain Co., Minneapolis, Minn.	Bristol, W. O. Goodsell ...
	<i>Middlings, Spring Wheat.</i>		
11049	Middlings	Brooks, Minneapolis, Minn.	Collinsville, F. W. Konold..
11088	" Niagara white ..	Cataract City Milling Co., Niagara Falls	Hamden, Ira W. Beers
11238	" Snowball flour ..	The Gardner Mill, Hastings, Minn.	Winsted, Balch & Platt ...
11031	"	Abner Hendee, New Haven	Avon, J. & H. Woodford..
11101	" \diamond	Imperial Milling Co., Duluth, Minn.	Meriden, A. H. Cashen....
11008	" Superior	Lake Superior Mills, Superior, Wis.	Guilford, Geo. F. Walter..
11136	" Colonial	Miner-Hillard Mill Co., Wilkesbarre, Pa.	Hartford, Daniels Mill Co..
10971	" Standard	New Prague Milling Co., New Prague, Minn.	Danielson, Waldo Bros....
11052	" "	New Prague Milling Co., New Prague, Minn.	Collinsville, Collinsville Grain Co....
11036	" Manhattan	New York City Milling Co., New York	Plantsville, T. B. Atwater..
11167	" Red Dog	New York City Milling Co., New York	Stamford, Scofield & Miller
11142	" A	Pillsbury, Minneapolis, Minn.	Suffield, Arthur Sikes
11132	" B	Pillsbury, Minneapolis, Minn.	Hartford, Smith, Northam & Co. ..
11118	"	Porter Milling Co., Winona, Minn.	East Hartford, G. M. White & Co.
11075	"	Sheffield Milling Co., Minneapolis	Wallingford, E. E. Hall...
11166	"	Sheffield Milling Co., Minneapolis	Stamford, Scofield & Miller
11066	"	Thornton & Chester Mill Co., Buffalo	Bristol, Geo. W. Eaton....
11177	" Snow's Cream ..	E. S. Woodworth & Co., Minneapolis	Bridgeport, Berkshire Mills Average of these 17* analy- ses
	<i>Mixed Feed from Winter Wheat.</i>		Average digestible
11134	Mixed Feed, Acme	Acme Milling Co., Indianapolis, Ind.	Hartford, Daniels Mill Co.
11100	" Buckeye	American Cereal Co., Chicago	Meriden, A. H. Cashen ...
11168	" "	American Cereal Co., Chicago	Stamford, Scofield & Miller

* Excluding No. 11136.

SAMPLED IN 1903.

Station No.	ANALYSES.						Price per ton.
	Water.	Ash.	Protein.	Fiber.	Nitrogen-free Extract. (Starch, gum, etc.)	Ether Extract.	
I1044	12.68	3.62	17.06	4.31	57.68	4.65	\$26.00
I0943	11.72	4.86	17.37	7.83	53.34	4.88	26.00
I1073	11.67	3.43	19.69	3.31	56.77	5.13	26.00
I1049	11.75	4.71	17.50	7.40	53.65	4.99	26.00
I1088	11.22	4.05	16.94	6.38	56.20	5.21	26.00
I1238	9.78	5.12	18.12	7.35	54.59	5.04	27.00
I1031	10.90	4.68	18.62	7.43	52.40	5.97	24.00
I1101	11.04	4.40	17.31	7.98	54.04	5.23	23.00
I1008	11.21	4.32	18.06	7.84	53.28	5.29	23.00
I1136	10.15	3.53	14.06	5.33	61.20	5.73	27.00
I0971	11.29	4.77	19.12	7.30	52.45	5.07	24.00
I1052	12.35	4.85	18.31	8.31	50.93	5.25	25.00
I1036	12.24	4.85	19.25	7.35	51.38	4.93	24.00
I1167	10.60	3.56	17.69	3.70	59.58	4.87	29.00
I1142	12.32	4.12	17.81	6.49	54.65	4.61	26.00
I1132	10.82	5.16	16.00	9.74	53.20	5.08	23.00
I1118	11.45	4.23	17.62	8.91	53.14	4.65	22.00
I1075	12.15	4.42	18.44	5.76	54.73	4.50	28.00
I1166	11.13	4.02	17.56	5.00	57.86	4.43	28.00
I1066	12.39	3.93	16.19	4.74	57.79	4.96	27.00
I1177	11.31	3.60	19.37	2.96	58.14	4.62	28.00
	11.41	4.40	17.88	6.74	54.59	4.98	25.50
	----	----	14.30	2.22	44.22	4.28	----
I1134	10.65	5.65	17.75	7.50	53.92	4.53	24.00
I1100	11.37	5.25	16.37	7.15	55.16	4.70	24.00
I1168	10.65	5.15	16.44	6.92	56.03	4.81	24.00

TABLE IV.—*Continued.* ANALYSES OF COMMERCIAL FEEDS.

Station No.	Name of Feed.	Manufacturer or Jobber.	Retail Dealer.
	<i>Mixed Feed from Winter Wheat.</i>		
11246	Mixed Feed, Buckeye	American Cereal Co., Chicago	Litchfield, Marsh & Newcomb
11084	" " "E"		Hamden, Ira W. Beers
11046	" " Berkshire		Plainville, F. B. Newton
10956	" " "	Blish Milling Co., Seymour, Ind.	Yantic, A. R. Manning & Co.
11115	" " "	Blish Milling Co., Seymour, Ind.	New Britain, Hugh Reynolds
11245	" " No. 32	Chapin & Co., Boston	Litchfield, Marsh & Newcomb
11095	" " Crown	Empire Mills, Hannibal, Mo.	Meriden, Meriden Grain & Feed Co.
11138	" " Erie		Suffield, Spencer Bros.
11161	" " Hoosier	Geo. T. Evans, Indianapolis, Ind.	Colchester, E. F. Strong
11249	" " Berkshire	R. J. Hardy & Sons, Boston	Washington, Washington Feed & Supply Co.
11012	" " "	Isaac Harter, Toledo, Ohio	Guilford, Geo. F. Walter
10970	" " Queen	Hecker-Jones-Jewell Co., New York	Danielson, Waldo Bros.
10986	" " "	Hecker-Jones-Jewell Co., New York	New Haven, R. G. Davis
11053	" " Manhattan	Hecker-Jones-Jewell Co., New York	Collinsville, Collinsville Grain Co.
11078	" " "	Hecker-Jones-Jewell Co., New York	North Haven, Co-op. Feed Co.
10967	" " Sunshine	Hunter Bros., St. Louis, Mo.	Jewett City, J. E. Leonard & Son.
11127	" " "	Hunter Bros., St. Louis, Mo.	Hartford, Smith, Northam & Co.
11014	" " "	Kehlor Bros., St. Louis, Mo.	Guilford, Morse & Landon
10965	" " Snowflake	Lawrenceburg Mill Co., Lawrenceburg, Ind.	Norwich, A. A. Beckwith
11104	" " "	Lawrenceburg Mill Co., Lawrenceburg, Ind.	Berlin, J. C. Lincoln
11063	" " Ideal	Chas. R. Lull, Milwaukee, Wis.	Bristol, Geo. W. Eaton
11068	" " "	Chas. R. Lull, Milwaukee, Wis.	Bristol, Geo. W. Eaton
11110	" " King	R. P. Moore Milling Co., Princeton, Ind.	New Britain, C. W. Lines Co.
11081	" " National		North Haven, Co-op. Feed Co.
11120	" " "	M. Neal, Massilon, Ohio	East Hartford, G. M. White & Co.
11250	" " "	N. M. Co., Noblesville, Ind.	Washington, Washington Feed & Supply Co.
11169	" " "	N. M. Co., Noblesville, Ind.	New Canaan, C. H. Fairty
10939	" " "	Rex Mill Co., Kansas City	So. Norwalk, M. T. Hatch

SAMPLED IN 1903.

Station No.	ANALYSES.						Price per ton.
	Water.	Ash.	Protein.	Fiber.	Nitrogen-free Extract. (Starch, gum, etc.)	Ether Extract.	
11246	10.40	5.12	16.00	6.99	56.59	4.90	\$23.00
11084	11.32	5.92	17.37	8.16	52.83	4.40	22.50
11046	12.13	4.70	17.69	6.49	54.26	4.73	24.00
10956	10.56	5.65	17.94	5.72	55.19	4.94	24.00
11115	10.87	5.88	15.87	7.38	55.65	4.35	23.00
11245	9.69	5.98	17.50	7.44	55.10	4.29	22.50
11095	11.02	5.75	16.62	7.63	54.43	4.55	24.00
11138	11.20	5.70	16.62	7.31	54.74	4.43	24.00
11161	10.40	5.74	15.56	7.19	56.41	4.70	25.00
11249	10.28	5.40	17.00	7.92	55.02	4.38	24.50
11012	11.40	5.93	15.69	7.64	54.76	4.58	24.00
10970	10.37	5.95	15.81	9.38	53.79	4.70	24.00
10986	11.69	6.18	15.62	8.79	53.09	4.63	22.00
11053	11.66	5.42	16.37	7.50	54.52	4.53	25.00
11078	11.55	5.34	16.12	7.90	54.51	4.58	23.00
10967	10.66	5.64	16.87	6.79	55.60	4.44	24.00
11127	10.55	5.84	15.31	7.63	56.10	4.57	24.00
11014	10.85	5.59	18.12	6.73	54.61	4.10	24.00
10965	10.74	5.65	16.06	7.04	55.69	4.82	24.00
11104	10.33	5.65	15.75	6.80	56.84	4.63	24.00
11063	11.19	4.62	14.94	11.76	54.04	3.45	23.00
11068	10.77	5.73	18.12	8.18	52.31	4.89	23.00
11110	10.57	5.87	18.56	7.75	52.50	4.75	23.00
11081	11.57	5.48	17.56	6.98	54.13	4.28	24.00
11120	11.42	5.06	16.25	6.60	56.24	4.43	23.00
11250	10.03	5.76	16.00	6.84	56.42	4.95	23.00
11169	10.60	5.62	17.81	7.16	54.47	4.34	23.00
10939	10.69	5.78	17.00	7.88	54.03	4.62	23.00

TABLE IV.—*Continued.* ANALYSES OF COMMERCIAL FEEDS.

Station No.	Name of Feed.	Manufacturer or Jobber.	Retail Dealer.
	<i>Mixed Feed from Winter Wheat.</i>		
11003	Mixed Feed	Rex Mill Co., Kansas City	Branford, S. V. Osborn....
11111	"	Sparks Milling Co., Alton, Ill.	New Britain, C. W. Lines Co.
11252	"	Sparks Milling Co., Alton, Ill.	Washington, Washington Feed & Supply Co.
10982	" Marine Star	Valier & Spies Milling Co., St. Louis, Mo.	Putnam, Bosworth Bros. ...
11152	" Farmers' Favorite..	Valley City Mill Co., Grand Rapids, Mich.	Willimantic, E. A. Buck & Co.
11158	" Farmers' Favorite..	Valley City Mill Co., Grand Rapids, Mich.	Stafford, E. C. Dennis....
10955	" Vermont .....	.....	Yantic, A. R. Manning & Co. Average of the 37† analyses Average digestible.....
	<i>Mixed Feed, unclassified.</i>		
10975	Mixed Feed, <w>	Chapin & Co., Boston....	Danielson, Young Bros. Co.
11154	" Ozark	Chapin & Co., Boston....	Willimantic, H. A. Bugbee
11153	" A. M. C. Booth	Crosby & Co., Brattleboro, Vt.	Willimantic, E. A. Buck & Co.
11037	" W. S. M.	Abner Hendee, New Haven	Southington, Southington Lumber & Feed Co.
11157	" Ben Hur....	Royal Milling Co., Minneapolis	Stafford, E. C. Dennis
11243	"	Simpson, Hendee & Co., New York	Thomaston, L. E. Blackmer
11033	"	Smith, Northam & Co., Hartford	Plantsville, T. B. Atwater..
11029*	" Blue Grass ..	A. Waller & Co., Henderson, Ky.	Avon, J. & H. Woodford..
11237*	" .....	.....	Winsted, Balch & Platt....
	<i>Mixed Feed from Spring Wheat.</i>		
10979	Mixed Feed, Bay State ..	Bay State Milling Co., Winona, Minn.	Danielson, Quinnebaug Store
11048	" Royal	Brooks Elevator Co., Minneapolis, Minn.	Collinsville, F. W. Konold
11256	" "	Brooks Elevator Co., Minneapolis, Minn.	Plainville, Geo. W. Eaton..
11239	" Kent	Chapin & Co., Boston....	Torrington, R. W. Jennings
11228	" Columbia ..	C. M. Cox Co., Boston	Danbury, F. C. Benjamin & Co.
10976	" Samoset	C. M. Cox Co., Boston	Danielson, Young Bros. Co.
11094	" Diamond ..	Diamond Milling Co., Grand Forks, N. Dak.	Meriden, Meriden Grain & Feed Co.
11232	" "	Diamond Milling Co., Grand Forks, N. Dak.	Danbury, F. C. Benjamin & Co.

* See notice on page 12.

† Excluding No. 11063.

SAMPLED IN 1903.

Station No.	ANALYSES.						Price per ton.
	Water.	Ash.	Protein.	Fiber.	Nitrogen-free Extract. (Starch, gum, etc.)	Ether Extract.	
11003	11.05	5.53	16.81	7.35	54.69	4.57	\$23.00
11111	10.27	5.63	17.25	7.30	55.02	4.53	23.00
11252	9.74	6.15	16.62	7.73	55.44	4.32	22.50
10982	11.13	5.41	15.94	9.13	53.84	4.55	23.00
11152	11.15	5.23	15.37	7.10	56.51	4.64	24.00
11158	11.67	5.09	15.37	6.54	57.04	4.29	24.00
10955	10.44	5.25	17.81	6.98	55.28	4.24	24.00
	10.85	5.58	16.67	7.40	54.97	4.53	23.55
	----	----	13.34	2.44	44.53	3.90	----
10975	11.18	6.25	17.19	7.11	53.15	5.12	24.00
11154	10.67	5.70	17.37	7.07	54.61	4.58	23.00
11153	11.38	4.32	20.69	6.24	53.04	4.33	25.00
11037	11.73	5.16	17.50	7.38	54.10	4.13	23.00
11157	10.82	5.13	18.00	7.35	53.21	5.49	24.00
11243	9.59	5.85	17.19	7.75	55.39	4.23	24.00
11033	11.54	5.25	17.31	6.86	54.68	4.36	24.00
11029	11.46	3.96	12.19	13.85	55.77	2.77	22.00
11237	9.56	4.88	14.44	13.52	54.47	3.13	24.00
10979	11.28	5.80	18.06	8.74	50.96	5.16	24.00
11048	12.50	4.66	15.62	8.21	54.31	4.70	24.00
11256	9.76	5.20	15.00	9.85	55.88	4.31	23.00
11239	9.11	6.22	17.19	8.85	54.08	4.55	24.00
11228	10.13	5.52	16.37	7.96	54.46	5.56	22.00
10976	11.17	5.20	17.56	8.47	52.97	4.63	23.00
11094	12.15	4.80	16.62	7.56	53.97	4.90	24.00
11232	9.67	4.93	18.12	8.02	53.95	5.31	22.00

TABLE IV.—*Continued.* ANALYSES OF COMMERCIAL FEEDS.

Station No.	Name of Feed.	Manufacturer or Jobber.	Retail Dealer.
	<i>Mixed Feed from Spring Wheat.</i>		
11240	Mixed Feed	Humboldt Mill Co., Minneapolis, Minn.	Torrington, R. W. Jennings
11229	“ Boston	Imperial Milling Co., Duluth, Minn.	Danbury, F. C. Benjamin & Co.
11255	“ Monogram	Imperial Milling Co., Minneapolis, Minn.	Plainville, Geo. W. Eaton.
11035	“ Fancy	Pillsbury, Minneapolis, Minn.	Plantsville, T. B. Atwater .
11234	“ “	Pillsbury, Minneapolis, Minn.	New Milford, F. R. Green.
11162	“ Angola	Simpson, Hendee & Co., New York	Colchester, E. F. Strong...
11040	“	Thornton & Chester Milling Co., Buffalo, N. Y.	Southington, Southington Lumber & Feed Co.
11065	“	Thornton & Chester Milling Co., Buffalo, N. Y.	Bristol, Geo. W. Eaton ..
11085	“	Thornton & Chester Milling Co., Buffalo, N. Y.	Hamden, Ira W. Beers
11113	“ Superior ...	Washburn-Crosby Co., Minneapolis	New Britain, C. W. Lines Co. Average of these 18 analyses Average digestible
	MAIZE PRODUCTS. <i>Corn Meal.</i>		
11107	Meal	Buffalo Cereal Co., Buffalo, N. Y.	Berlin, J. C. Lincoln
11059	“	Collinsville Grain Co., Collinsville	Collinsville, Collinsville Grain Co.
10940	“	Daniels Mill Co., Hartford	Saybrook, J. H. Day, Jr. .. Average of these 3 analyses Average digestible
11130	Bran	Smith, Northam & Co., Hartford	Hartford, Smith, Northam & Co.
	<i>Gluten Meal.</i>		
11126	Cream Gluten Meal	Illinois Sugar Refining Co., Chicago, Ill.	Hartford, Smith, Northam & Co.
11137	“ “ “	Illinois Sugar Refining Co., Chicago, Ill.	Hartford, Daniels Mill Co..
11151	“ “ “	Illinois Sugar Refining Co., Chicago, Ill.	Putnam, Bosworth Bros. .. Guaranty
	<i>Gluten Feed.</i>		
10994	Buffalo Gluten Feed	Glucose Sugar Refining Co., Chicago, Ill.	New Haven, J. T. Benham Est.
11000	“ “ “	Glucose Sugar Refining Co., Chicago, Ill.	East Haven, Hawkins & Forbes

SAMPLED IN 1903.

Station No.	ANALYSES.						Price per ton.
	Water.	Ash.	Protein.	Fiber.	Nitrogen-free Extract. (Starch, gum, etc.)	Ether Extract.	
11240	10.46	5.22	18.00	7.91	53.16	5.25	\$24.00
11229	10.58	5.00	16.87	8.36	54.73	4.46	22.00
11255	9.73	4.93	18.31	7.18	54.64	5.21	24.00
11035	11.66	4.59	17.25	6.89	54.93	4.68	24.00
11234	10.23	5.26	17.81	6.98	54.58	5.14	26.00
11162	10.41	5.47	15.62	10.00	53.80	4.70	25.00
11040	11.12	5.08	16.25	8.37	54.20	4.98	23.00
11065	11.32	5.41	16.44	8.17	53.44	5.22	23.00
11085	11.38	5.35	16.87	8.41	52.88	5.11	22.50
11113	10.86	4.98	17.37	7.82	53.61	5.36	24.00
	10.75	5.20	16.96	8.21	53.92	4.96	23.53
	----	----	13.57	2.05	42.06	3.87	----
11107	13.57	1.05	8.19	1.09	73.18	2.92	25.00
11059	13.97	1.28	9.00	1.68	70.29	3.78	25.00
10940	13.39	1.27	9.00	2.15	70.47	3.72	26.00
	13.64	1.20	8.73	1.64	71.32	3.47	25.33
	----	----	5.94	----	67.75	3.19	----
11130	10.77	2.90	11.31	8.26	58.94	7.82	20.00
11126	12.05	0.56	35.94	1.18	48.49	1.78	32.00
11137	12.07	0.73	37.19	1.40	46.98	1.63	32.00
11151	9.55	0.75	38.06	1.17	44.08	6.39	32.00
	----	----	34.12	----	----	3.2	----
	11.22	0.68	37.06	1.25	46.52	3.27	32.00
	----	----	32.61	----	48.87	3.07	----
10994	10.18	2.67	24.37	5.92	53.69	3.17	25.00
11000	10.69	1.21	24.81	8.13	52.51	2.65	25.00

TABLE IV.—*Continued.* ANALYSES OF COMMERCIAL FEEDS.

Station No.	Name of Feed.	Manufacturer or Jobber.	Retail Dealer.
	<i>Gluten Feed, Continued.</i>		
11006	Buffalo Gluten Feed -----	Glucose Sugar Refining Co., Chicago, Ill.	Branford, S. V. Osborn ...
11175	" " " -----	Glucose Sugar Refining Co., Chicago, Ill.	Bridgeport, Standard Feed Co.
11080	" " " -----	Glucose Sugar Refining Co., Chicago, Ill.	North Haven, Co-op. Feed Co.
11198	" " " -----	Glucose Sugar Refining Co., Chicago, Ill.	Meriden, Meriden Grain & Feed Co.
10748	" " " -----	Glucose Sugar Refining Co., Chicago, Ill.	New Haven, R. G. Davis..
11203	" " " -----	Glucose Sugar Refining Co., Chicago, Ill.	New London, Beebe & Bragaw.....
11201	" " " -----	Glucose Sugar Refining Co., Chicago, Ill.	Plainville, G. W. Eaton ...
11199	" " " -----	Glucose Sugar Refining Co., Chicago, Ill.	Southington, Southington Lumber & Feed Co.
11196	" " " -----	Glucose Sugar Refining Co., Chicago, Ill.	Wallingford, E. E. Hall... Westville,
10749	" " " -----	Glucose Sugar Refining Co., Chicago, Ill.	W. E. Warner & Bro. ...
11261	" " " -----	Glucose Sugar Refining Co., Chicago, Ill.	Willimantic, H. A. Bugbee
11197	" " " -----	Glucose Sugar Refining Co., Chicago, Ill.	Yalesville, W. T. McKenzie Guaranty
			Average of these 14 analyses Average digestible
10935	Flint Gluten Feed -----	Flint Mill Co., Milwaukee	South Norwalk, M. T. Hatch.....
11200	" " " -----	Flint Mill Co., Milwaukee	Plainville, G. W. Eaton.....
			Guaranty
			Average of these 2 analyses Average digestible.....
10963	Globe Gluten Feed -----	New York Glucose Co., New York	Norwich, A. A. Beckwith .
11116	" " " -----	New York Glucose Co., New York	New Britain, Hugh Rey- nolds
10747	" " " -----	New York Glucose Co., New York	New Haven, R. G. Davis..
11258	" " " -----	New York Glucose Co., New York	New London, E. H. Calkins
11202	" " " -----	New York Glucose Co., New York	New London, Arnold Rudd
11260	" " " -----	New York Glucose Co., New York	Willimantic, E. A. Buck & Co.
			Guaranty
			Average of these 6 analyses Average digestible

SAMPLED IN 1903.

Station No.	ANALYSES.						Price per ton.
	Water.	Ash.	Protein.	Fiber.	Nitrogen-free Extract. (Starch, gum, etc.)	Ether Extract.	
11006	10.03	1.94	22.50	7.32	54.87	3.34	\$26.00
11175	9.75	1.60	25.12	7.83	52.05	3.65	26.00
11080	10.45	1.56	23.56	7.05	54.43	2.95	25.00
11198	9.59	----	23.56	----	----	3.60	27.00
10748	9.62	----	24.87	----	----	3.58	26.00
11203	8.97	----	24.25	----	----	3.47	26.00
11201	8.98	----	24.12	----	----	3.03	27.00
11199	10.73	----	22.50	----	----	2.17	27.00
11196	9.66	----	24.50	----	----	2.81	26.00
10749	9.75	----	24.25	----	----	3.46	25.00
11261	10.02	----	24.87	----	----	3.06	27.00
11197	8.75	----	25.62	----	----	3.13	26.00
	-----	-----	27.5	-----	-----	3.0	-----
	9.79	1.80	24.21	7.27	53.80	3.15	26.00
	-----	-----	20.82	5.67	47.88	2.65	-----
10935	8.95	0.77	19.37	6.53	61.15	3.23	27.00
11200	9.23	----	22.75	----	----	4.18	27.00
	-----	-----	28.5	-----	-----	3.0	-----
	9.09	0.77	21.06	6.53	58.85	3.70	27.00
	-----	-----	18.11	5.09	52.38	3.11	-----
10963	9.39	2.18	25.69	7.61	51.91	3.22	29.00
11116	10.00	1.26	26.75	7.53	51.23	3.23	26.00
10747	9.35	----	28.12	----	----	2.38	26.00
11258	8.72	----	26.25	----	----	2.36	26.00
11202	10.10	----	24.37	----	----	4.27	27.00
11260	9.48	----	24.87	----	----	2.74	26.00
	-----	-----	27.0	-----	-----	3.1	-----
	9.46	1.72	26.01	7.57	52.21	3.03	26.60
	-----	-----	22.36	5.90	46.47	2.55	-----

TABLE IV.—*Continued.* ANALYSES OF COMMERCIAL FEEDS.

Station No.	Name of Feed.	Manufacturer or Jobber.	Retail Dealer.
	<i>Gluten Feed, Continued.</i>		
11150	K. K. K. Gluten Feed ---	J. E. Hubinger Bros. Co., Keokuk, Ill.	New Haven, R. G. Davis.. Guaranty Average digestible
11061	Pekin Gluten Feed	Illinois Sugar Refining Co., Chicago, Ill.	Bristol, Geo. W. Eaton....
11122	" " "	Illinois Sugar Refining Co., Chicago, Ill.	East Hartford, W. J. Cox .. Guaranty Average of these 2 analyses Average digestible
11027	Warner's Gluten Feed ---	Warner Sugar Refining Co., Chicago, Ill.	Avon, J. & H. Woodford..
11047	" " " ---	Warner Sugar Refining Co., Chicago, Ill.	Plainville, F. B. Newton..
11235	" " " ---	Warner Sugar Refining Co., Chicago, Ill.	Winsted, Balch & Platt.... Guaranty Average of these 3 analyses Average digestible.....
11026	Gluten	Manufacturer not known ..	New Haven, Abner Hendee
11148	Gluten Feed (no brand) ..	Glucose Sugar Refining Co., Chicago, Ill.	Rockville, Rockville Milling Co....
	<i>Hominy Feed.</i>		
11233	Hominy Feed	American Cereal Co., Chicago, Ill.	New Milford, F. R. Green..
11218	" "	American Cereal Co., Chicago, Ill.	Watertown, C. W. & T. F. Atwood..
11013	" "	American Hominy Co., Indianapolis, Ind.	Guilford, Morse & Landon

SAMPLED IN 1903.

Station No.	ANALYSES.						Price per ton.
	Water.	Ash.	Protein.	Fiber.	Nitrogen-free Extract. (Starch, gum, etc.)	Ether Extract.	
III50*	8.50	0.98	19.44	5.79	62.76	2.53	24.00
	----	----	24.60	----	----	1.7	
	----	----	16.72	4.52	55.86	2.13	
II061	8.98	1.10	26.56	7.59	51.52	4.25	26.00
III22	9.95	0.93	24.25	8.16	53.23	3.48	27.00
	----	----	28.0	----	----	3.0	
	9.46	1.02	25.40	7.88	52.37	3.87	
	----	----	21.84	6.15	46.61	3.25	26.50
II027	10.22	1.00	24.94	6.65	54.72	2.47	25.00
II047	8.70	1.12	22.87	8.51	56.15	2.65	26.00
II235	8.70	0.96	23.81	7.69	56.17	2.67	29.00
	----	----	28.0	----	----	3.5	
	9.21	1.03	23.87	7.62	55.67	2.60	
	----	----	20.5	5.94	49.53	2.18	26.57
II026	9.91	1.39	26.56	7.69	51.64	2.81	25.00
III48	8.55	1.84	23.19	7.32	55.67	3.43	26.00
II233	8.89	2.75	10.87	4.80	64.66	8.03	25.00
II218	10.14	2.60	11.37	4.74	62.97	8.18	24.00
II013	11.31	2.18	10.62	3.06	66.39	6.44	26.00

* See note on page 16.

TABLE IV.—*Continued.* ANALYSES OF COMMERCIAL FEEDS.

Station No.	Name of Feed.	Manufacturer or Jobber.	Retail Dealer.
	<i>Hominy Feed.</i>		
11176	Hominy Meal, D	American Hominy Co., Indianapolis, Ind.	Bridgeport, Standard Feed Co.
11093	" Feed	Buffalo Cereal Co., Buffalo, N. Y.	Meriden, Meriden Grain & Feed Co.
10946	" Chop	Chapin & Co., Boston, Mass.	New London, Beebe & Bragaw
11001	"	Chapin & Co., Boston, Mass.	East Haven, Hawkins & Forbes.
11140	Hominy Chop, Green Diamond	Chapin & Co., Boston, Mass.	Suffield, Spencer Bros.
11163	Hominy Chop, Green Diamond	Chapin & Co., Boston, Mass.	Colchester, E. F. Strong...
11057	Hominy, Niagara White Meal ...	Chapin & Co., Boston, Mass.	Collinsville, Collinsville Grain Co.
11125	Hominy, Niagara White Meal ...	Chapin & Co., Boston, Mass.	East Hartford, W. J. Cox..
11043	Hominy Feed	Chas. M. Cox Co., Boston, Mass.	Plainville, F. B. Newton..
11121	" " Worthmore	Chas. M. Cox Co., Boston, Mass.	East Hartford, G. M. White & Co.
10944	" Chop	Hollister, Chase & Co., New York	Groton, Groton Grain Co. .
11079	"	A. F. Lane, New York ..	North Haven, Co-op. Feed Co.
11091	"	Miner-Hillard Mill Co., Wilkesbarre, Pa.	Meriden, S. A. Billings....
11106	" Chop, Star	Miner-Hillard Mill Co., Wilkesbarre, Pa.	Berlin, J. C. Lincoln
11171	" " Mixed ...	Miner-Hillard Mill Co., Wilkesbarre, Pa.	New Canaan, C. H. Fairty..
11032	" Feed	Miner-Hillard Mill Co., Wilkesbarre, Pa.	Plantsville, T. B. Atwater..
11067	" "	Miner-Hillard Mill Co., Wilkesbarre, Pa.	Bristol, Geo. W. Eaton....
11145	" Chop	Noblesville Milling Co., Noblesville, Ind.	Manchester, Manchester Elev. Co.
11077	"	Chas. Payne & Son, New York	Wallingford, E. E. Hall....
10987	"	Wm. M. Payne & Son, New York	New Haven, R. G. Davis..
11050	" Star	Wm. T. Reynolds, Poughkeepsie, N. Y.	Collinsville, F. W. Konold..
10942	Hominy Chop, Blue Ribbon	J. E. Soper & Co., Boston, Mass.	Stonington, S. H. Chesebro
11103	Hominy Feed	Suffern, Hunt & Co., Decatur, Ill.	Berlin, J. C. Lincoln
10966	" Chop	The Patent Cereals Co., Geneva, N. Y.	Jewett City, J. E. Leonard & Son
			Average of these 24* analy- ses
			Average digestible

* Excluding Nos. 11106, 11171 and 11050.

SAMPLED IN 1903.

Station No.	ANALYSES.						Price per ton.
	Water.	Ash.	Protein.	Fiber.	Nitrogen-free Extract. (Starch, gum, etc.)	Ether Extract.	
11176	8.98	2.46	10.31	4.15	66.45	7.65	\$25.00
11093	9.97	2.72	10.31	5.29	63.36	8.35	24.00
10946	9.23	3.33	11.06	5.49	60.18	10.71	24.00
11001	9.78	2.55	10.69	4.43	65.26	7.29	24.00
11140	9.42	2.13	10.12	4.27	65.88	8.18	24.00
11163	9.09	2.49	10.44	4.03	66.06	7.89	24.00
11057	10.93	2.16	10.06	3.90	66.52	6.43	24.00
11125	9.65	3.00	10.75	3.78	63.59	9.23	25.00
11043	11.72	2.76	10.37	4.33	62.82	8.00	25.00
11121	9.30	2.35	10.31	3.51	67.30	7.23	24.00
10944	9.21	2.10	9.94	3.10	69.21	6.44	25.00
11079	10.27	2.52	10.75	3.29	65.37	7.80	24.00
11091	10.32	2.48	10.25	4.01	65.26	7.68	24.00
11106	10.87	2.99	9.31	6.63	65.60	4.60	23.00
11171	9.31	2.44	8.75	8.24	67.39	3.87	24.00
11032	9.53	2.16	10.00	3.82	67.66	6.83	25.00
11067	9.85	2.33	10.12	3.73	66.96	7.01	24.00
11145	9.32	2.90	10.81	3.79	63.85	9.33	24.00
11077	9.46	2.60	10.75	3.96	65.53	7.70	24.00
10987	10.57	2.60	10.69	3.99	64.48	7.67	20.00
11050	9.65	2.49	8.56	10.17	62.91	6.22	24.00
10942	8.59	2.42	10.50	3.94	66.86	7.69	26.00
11103	10.37	2.71	10.06	3.87	64.94	8.05	25.00
10966	9.43	2.79	10.62	3.84	64.54	8.78	24.00
	9.80	2.54	10.49	4.05	65.27	7.85	24.28
	----	----	7.13	----	62.01	7.22	----

TABLE IV.—*Continued.* ANALYSES OF COMMERCIAL FEEDS.

Station No.	Name of Feed.	Manufacturer or Jobber.	Retail Dealer.
RYE PRODUCTS.			
11082	Rye Bran	Abner Hendee, New Haven	North Haven, Co-op. Feed Co.
11023	Rye Feed	Oneonta Mill Co., Oneonta, N. Y.	New Haven, Abner Hendee
11242	" "	Oneonta Mill Co., Oneonta, N. Y.	Torrington, E. H. Talcott -
11183	" Bran	Miner-Hillard Mill Co., Wilkesbarre, Pa.	Ansonia, Ansonia Flour & Grain Co.
11244	" "	Miner-Hillard Mill Co., Wilkesbarre, Pa.	Thomaston, L. E. Blackmer
11102	" Feed	Smith, Northam & Co., Hartford	Meriden, A. H. Cashen ...
11123	" "	J. E. Soper & Co., Boston	East Hartford, G. M. White & Co.
11112	" Bran	H. D. Stone Milling Co., Rochester, N. Y.	New Britain, C. W. Lines Co.
11128	" Feed	H. D. Stone Milling Co., Rochester, N. Y.	Hartford, Smith, Northam & Co.
			Average of these 9 analyses
			Average digestible
BARLEY PRODUCTS.			
11165	Barley Sprouts	Hollister, Chase & Co., New York	Stamford, Scofield & Miller
11230	" "	E. P. Mueller, Milwaukee, Wis.	Danbury, F. C. Benjamin & Co.
10985	Malt "	E. P. Mueller, Milwaukee, Wis.	New Haven, R. G. Davis..
11257	Barley "	Hollister, Chase & Co., New York	Plainville, Geo. W. Eaton.
			Average of these 3*analyses
			Average digestible
Distillery Grains.			
11159	Ajax Flakes	Chapin & Co., Boston, Mass.	Colchester, E. F. Strong ..
10980	" "	Chapin & Co., Boston, Mass.	Putnam, F. M. Coles & Co.
11055	" "	Chapin & Co., Boston, Mass.	Collinsville, Collinsville Grain Co.
10960	Distillers Grains, Hall's AAAA	Robert E. Hall & Co., Cincinnati, Ohio	Norwich, Norwich Grain Co.
			Guaranty
			Average of the 3 analyses of Ajax Flakes
			Average digestible
OAT PRODUCTS.			
11002	Ground Oats	Hawkins & Forbes, East Haven	East Haven, Hawkins & Forbes
11219	" "	C. W. & T. F. Atwood, Watertown	Watertown, C. W. & T. F. Atwood ..
11179	Berkshire Victor Oat Feed	Berkshire Mills, Bridgeport	Bridgeport, Berkshire Mills
11149	Oat Feed	C. M. Cox Co., Boston, Mass.	New Haven, R. G. Davis..

* Excluding No. 11165.

SAMPLED IN 1903.

Station No.	ANALYSES.						Price per ton.
	Water.	Ash.	Protein.	Fiber.	Nitrogen-free Extract. (Starch, gum, etc.)	Ether Extract.	
11082	12.77	3.93	15.50	4.13	60.56	3.11	\$27.00
11023	11.42	4.03	15.19	5.09	61.18	3.09	23.00
11242	11.59	3.90	14.81	5.00	61.53	3.17	26.00
11183	10.87	4.02	17.12	4.47	60.24	3.28	27.00
11244	10.92	3.43	15.62	3.80	63.13	3.10	27.00
11102	12.97	3.25	15.00	3.72	62.36	2.70	24.00
11123	11.80	5.40	16.31	6.44	56.73	3.32	23.00
11112	12.25	3.21	15.56	3.60	62.68	2.70	26.00
11128	12.52	3.06	15.00	3.58	63.09	2.75	24.00
	11.90	3.80	15.57	4.43	61.28	3.02	25.22
	----	----	13.08	----	56.38	1.93	----
11165	9.45	12.13	14.69	22.15	39.90	1.68	19.00
11230	6.57	6.61	27.37	14.82	43.49	1.14	19.00
10985	8.35	6.28	25.56	14.88	43.40	1.53	18.00
11257	11.00	6.12	28.81	10.94	41.13	2.00	20.00
	8.64	6.34	27.25	13.55	42.66	1.56	19.00
	----	----	----	----	----	----	----
11159	7.84	1.76	30.31	14.19	37.64	8.26	31.00
10980	7.13	1.74	32.19	12.54	32.73	13.67	29.00
11055	7.77	2.07	34.19	11.97	29.65	14.35	30.00
10960	7.23	1.91	30.56	11.71	36.08	12.51	29.00
	----	----	33.0	----	----	12.0	----
	7.58	1.86	32.23	12.90	33.34	12.09	29.25
	----	----	25.78	4.30	22.67	12.09	----
11002	10.99	3.18	10.62	9.56	61.49	4.16	33.00
11219	11.59	3.12	11.81	9.55	59.23	4.70	30.00
11179	9.67	4.26	9.19	17.05	56.80	3.03	20.00
11149	6.41	5.62	6.94	23.61	53.79	3.63	18.00

TABLE IV.—*Continued.* ANALYSES OF COMMERCIAL FEEDS.

Station No.	Name of Feed.	Manufacturer or Jobber.	Retail Dealer.
OAT PRODUCTS.			
11170	Oat Feed	C. M. Cox Co., Boston, Mass.	New Canaan, C. H. Fairty.
11174	" O. M.	C. M. Cox Co., Boston, Mass.	Bridgeport, Standard Feed Co.
11226	" "	C. M. Cox Co., Boston, Mass.	Waterbury, The Platt Mills Co.
10968	Pillsbury's Oat Feed	Pillsbury, Minneapolis, Minn.	Jewett City, J. E. Leonard & Son
11156	Royal Oat Feed	The Great Western Cereal Co., Chicago	Willimantic, H. A. Bugbee
11054	Vim Oat Feed	American Cereal Co., Chicago, Ill.	Collinsville, Collinsville Grain Co.
MISCELLANEOUS MIXED FEEDS.			
11058	Provender	Collinsville Grain Co., Collinsville, Conn.	Collinsville, Collinsville Grain Co.
11248	"	Marsh & Newcomb, Litchfield.	Litchfield, Marsh & Newcomb
11254	"	Washington Feed & Supply Co., Washington	Washington, Washington Feed & Supply Co.
11025	Victor Corn and Oat Feed	American Cereal Co., Chicago, Ill.	Average of the 3 analyses Average digestible
11028	" "	American Cereal Co., Chicago, Ill.	New Haven, Abner Hendee
11220	" "	American Cereal Co., Chicago, Ill.	Avon, J. & H. Woodford.. Watertown, C. W. & T. F. Atwood.. Guaranty
10981	XXX Corn and Oat Feed	Buffalo Cereal Co., Buffalo, N. Y.	Average of the 3 analyses Average digestible
11069	" "	Buffalo Cereal Co., Buffalo, N. Y.	Putnam, F. M. Coles & Co., Bristol, W. O. Goodsell ... Guaranty
11124	De-Fi Corn and Oat Feed	Ellsworth & Co., Buffalo, N. Y.	Average of the 2 analyses Average digestible
11217	" "	Ellsworth & Co., Buffalo, N. Y.	East Hartford, W. J. Cox .. Ansonia, Ansonia Flour & Grain Co.
10936	Boss Corn and Oat Feed.	Great Western Cereal Co., Chicago, Ill.	Guaranty
11021	" "	Great Western Cereal Co., Chicago, Ill.	Average of the 2 analyses Average digestible
			So. Norwalk, M. T. Hatch
			New Haven, Abner Hendee
			Guaranty
			Average of the 2 analyses..
			Average digestible

SAMPLED IN 1903.

Station No.	ANALYSES.						Price per ton.
	Water.	Ash.	Protein.	Fiber.	Nitrogen-free Extract. (Starch, gum, etc.)	Ether Extract.	
11170	6.15	5.55	6.56	24.88	53.39	3.47	\$20.00
11174	6.62	5.65	6.75	23.73	53.62	3.63	20.00
11226	7.76	5.70	6.31	24.50	52.08	3.65	20.00
10968	8.14	6.86	7.06	24.80	51.16	1.98	23.00
11156	8.07	6.31	6.19	25.19	52.49	1.75	20.00
11054	9.50	5.34	7.69	22.83	51.97	2.67	16.00
11058	13.10	1.87	12.31	4.00	64.54	4.18	27.00
11248	12.03	1.65	9.62	3.10	69.75	3.85	27.00
11254	11.67 12.27 ----	1.98 1.83 ----	9.94 10.62 7.54	4.64 3.91 1.88	67.71 67.34 55.89	4.06 4.03 3.51	27.00 27.00 ----
11025	10.67	3.53	8.94	10.17	62.93	3.76	24.00
11028	9.81	3.79	8.81	11.04	62.18	4.37	20.00
11220	10.79 10.42 ----	3.59 3.64 ----	8.75 9.0 8.83 6.27	10.67 ----- 10.63 5.10	62.27 ----- 62.46 51.84	3.93 4.0 4.02 3.50	23.00 ----- 22.33 ----
10981	9.75	3.17	9.62	9.63	62.88	4.95	25.00
11069	5.10 7.43 ----	3.27 3.22 ----	9.69 9.5 9.66 6.87	10.24 ----- 9.94 4.77	66.47 ----- 64.66 53.67	5.23 4.5 5.09 4.42	27.00 ----- ----- ----
11124	9.90	3.81	8.12	13.40	62.03	2.74	23.00
11217	9.71 9.80 ----	3.62 3.72 ----	9.50 8.3 8.81 6.26	13.42 ----- 13.41 6.44	60.69 ----- 61.36 50.93	3.06 3.0 2.90 2.52	24.00 ----- 23.50 ----
10936	9.75	3.96	8.25	11.20	62.49	4.35	25.00
11021	10.45 ----- 10.10 ----	3.63 ----- 3.79 ----	9.06 8.5 8.66 6.15	10.35 ----- 10.78 5.17	61.72 ----- 62.10 51.54	4.79 4.0 4.57 3.98	24.00 ----- 24.50 ----

TABLE IV.—*Continued.* ANALYSES OF COMMERCIAL FEEDS.

Station No.	Name of Feed.	Manufacturer or Jobber.	Retail Dealer.
	MISCELLANEOUS MIXED FEEDS.		
11224	Durham Corn and Oat Feed	Great Western Cereal Co., Chicago, Ill.	Waterbury, I. A. Spencer.. Guaranty
11064	CORN, OATS AND BARLEY. Schumachers Stock Feed	American Cereal Co., Chicago, Ill.	Digestible matter
10993	“ “	American Cereal Co., Chicago, Ill.	Bristol, Geo. W. Eaton New Haven, J. T. Benham Est. Guaranty
	PROPRIETARY HORSE FEEDS.		Average of the 2 analyses ..
11114	Blomo Feed	Blomo M'f'g Co., New York	New Britain, C. W. Lines & Co. Guaranty
10988	Horse Feed	Buffalo Cereal Co., Buffalo, N. Y.	New Haven, R. G. Davis..
11141	“ “	Buffalo Cereal Co., Buffalo, N. Y.	Suffield, Arthur Sikes Guaranty
			Average of the 2 analyses..
11011	H-O Horse Feed	H-O Co., Buffalo, N. Y. ..	Guilford, Geo. F. Walter..
11024	“ “	H-O Co., Buffalo, N. Y. ..	New Haven, Abner Hendee Guaranty
			Average of the 2 analyses..
10998	Molasses Feed for Horses	E. P. Mueller, Milwaukee, Wis.	East Haven, Hawkins & Forbes.....
11222	“ “ “	E. P. Mueller, Milwaukee, Wis.	Waterbury, D. L. Dickinson & Son.. Guaranty
	PROPRIETARY POULTRY FEED.		Average of the 2 analyses..
10941	American Poultry Feed..	American Cereal Co., Chicago, Ill.	Saybrook, J. H. Day, Jr..
11147	“ “ “ ..	American Cereal Co., Chicago, Ill.	Rockville, Rockville Milling Co.... Guaranty
			Average of the 2 analyses..
10991	Poultry Feed	Buffalo Cereal Co., Buffalo	New Haven, R. G. Davis..
11098	“ “	Buffalo Cereal Co., Buffalo	Meriden, Meriden Grain & Feed Co.
			Guaranty
			Average of the 2 analyses..
11010	H-O Poultry Feed	H-O Co., Buffalo, N. Y. ..	Guilford, Geo. F. Walter ..
11060	“ “	H-O Co., Buffalo, N. Y. ..	Bristol, Geo. W. Eaton...
11097	“ “	H-O Co., Buffalo, N. Y. ..	Meriden, Meriden Grain & Feed Co.
			Guaranty
			Average of the 3 analyses..

SAMPLED IN 1903.

Station No.	ANALYSES.						Price per ton.
	Water.	Ash.	Protein.	Fiber.	Nitrogen-free Extract. (Starch, gum, etc.)	Ether Extract.	
II224	9.87	4.18	8.25	10.97	62.43	4.30	\$24.00
	----	----	8.3	----	----	3.6	----
	----	----	5.85	5.27	51.82	3.74	----
II064	10.35	4.09	12.19	10.00	58.78	4.59	25.00
IO993	9.91	4.27	11.56	9.93	59.54	4.79	26.00
	----	----	13.0	----	----	5.0	----
	10.13	4.18	11.87	9.94	59.19	4.69	25.50
IIII4	16.57	9.55	17.31	10.77	45.20	0.60	27.00
	----	----	15.0	----	----	1.0	----
IO986	10.55	2.94	11.87	10.32	59.87	4.45	26.00
II141	9.92	3.15	11.87	10.17	60.39	4.50	26.00
	----	----	12.0	----	----	4.50	----
	10.23	3.05	11.87	10.25	60.12	4.48	26.00
II011	11.00	2.84	12.12	9.12	60.39	4.53	30.00
II024	11.04	2.80	11.94	8.65	61.57	4.00	29.00
	----	----	12.5	----	----	4.50	----
	11.02	2.82	12.03	8.89	60.97	4.27	29.50
IO998	16.02	6.36	15.81	8.89	50.94	1.98	20.00
II222	14.93	6.01	16.87	8.09	52.50	1.60	25.00
	----	----	21.8	----	----	2.8	----
	15.47	6.18	16.34	8.49	51.72	1.79	22.50
IO941	10.57	3.27	14.37	5.06	60.40	6.33	29.00
II147	11.40	3.10	15.50	3.65	60.82	5.53	35.00
	----	----	14.0	----	----	4.5	----
	10.98	3.19	14.93	4.36	60.61	5.93	32.00
IO991	12.12	2.78	16.19	4.95	59.64	4.32	32.00
II098	10.40	3.04	16.75	5.24	59.70	4.87	34.00
	----	----	17.0	----	----	5.5	----
	11.26	2.91	16.47	5.09	59.68	4.59	33.00
II010	11.15	2.48	16.50	4.52	59.72	5.63	35.00
II060	10.48	2.59	16.75	4.42	60.08	5.68	36.00
II097	10.17	2.74	15.62	4.59	61.80	5.08	34.00
	----	----	17.0	----	----	5.5	----
	10.60	2.60	16.29	4.51	60.54	5.46	35.00

TABLE IV.—*Continued.* ANALYSES OF COMMERCIAL FEEDS.

Station No.	Name of Feed.	Manufacturer or Jobber.	Retail Dealer.
	PROPRIETARY POULTRY FEED.		
11253	Wheat Shreds	Natural Food Co., Niagara Falls, N. Y.	Washington, Washington Feed & Supply Co.
11160	Beef Scrap	The Bowker Co., Boston, Mass.	Colchester, E. F. Strong ..
10959	"	New England Fertz. Co., Boston, Mass.	Yantic, A. R. Manning & Co.
11146	"	The L. T. Frisbie Co., Hartford, Conn.	Manchester, Manchester Elev. Co.
11018	Bone and Meat Meal	McCoy & Best, Peekskill, N. Y.	Guilford, F. H. Rolf
10977	Meat Meal	Rogers Mfg. Co., Rockfall, Conn.	Danielson, Young Bros. Co.
11181	Spratt's Patent Beef Scrap	Newark, N. J.	Derby, Peterson-Hendee Co.
	PROPRIETARY DAIRY AND STOCK FEEDS.		
11007	Quaker Dairy Feed	American Cereal Co., Chicago, Ill.	Branford, S. V. Osborn
11030	" " "	American Cereal Co., Chicago, Ill.	Avon, J. & H. Woodford ..
11129	" " "	American Cereal Co., Chicago, Ill.	Hartford, Smith, Northam & Co. ..
11144	" " "	American Cereal Co., Chicago, Ill.	Suffield, Arthur Sikes
11251	" " "	American Cereal Co., Chicago, Ill.	Washington, Washington Feed & Supply Co.
			Guaranty
			Average of the 5 analyses..
11173	Dairy Feed	Buffalo Cereal Co., Buffalo	Bridgeport, Wm. M. Terry & Co.
			Guaranty
10938	H-O Dairy Feed	H-O Co., Buffalo, N. Y. ..	So. Norwalk, M. T. Hatch..
11071	" "	H-O Co., Buffalo, N. Y. ..	Bristol, W. O. Goodsell...
			Guaranty
			Average of the 2 analyses..
10989	Creamery Feed	Buffalo Cereal Co., Buffalo, N. Y.	New Haven, R. G. Davis..
11072	" "	Buffalo Cereal Co., Buffalo, N. Y.	Bristol, W. O. Goodsell...
11096	" "	Buffalo Cereal Co., Buffalo, N. Y.	Meriden, Meriden Grain & Feed Co.
			Guaranty
			Average of the 3 analyses..
11221	Dickinson's Stock Feed ..	D. L. Dickinson & Son, Waterbury, Conn.	Waterbury, D. L. Dickinson & Son, ..
			Guaranty

SAMPLED IN 1903.

Station No.	ANALYSES.						Price per ton.
	Water.	Ash.	Protein.	Fiber.	Nitrogen-free Extract. (Starch, gum, etc.)	Ether Extract.	
11253	7.15	1.75	11.06	1.85	76.25	1.94	\$32.00
11160	7.50	29.92	43.81	----	2.67	16.10	60.00
10959	8.68	29.01	45.12	----	3.47	13.72	34.00
11146	7.62	29.04	45.19	----	3.72	14.43	50.00
11018	6.10	37.08	43.19	----	4.34	9.29	50.00
10977	6.10	49.85	27.25	----	2.49	14.31	37.00
11181	9.91	16.56	56.56	----	3.89	13.08	50.00
11007	8.81	5.26	14.75	15.34	51.95	3.89	24.00
11030	8.70	5.56	14.06	15.64	51.90	4.14	22.00
11129	8.65	5.27	14.37	16.79	51.07	3.85	23.00
11144	8.20	5.55	14.62	15.33	51.70	4.60	22.00
11251	8.47	4.90	14.31	14.57	53.98	3.77	21.00
	----	----	14.0	----	----	3.5	
	8.57	5.31	14.42	15.53	52.12	4.05	22.00
11173	8.86	2.83	14.44	13.26	55.92	4.69	26.00
	----	----	14.0	----	----	4.0	
10938	9.34	3.83	17.37	12.76	52.66	4.04	27.00
11071	10.03	3.35	17.62	11.30	52.67	5.03	27.00
	----	----	18.0	----	----	4.5	
	9.68	3.59	17.49	12.03	52.68	4.53	
10989	10.33	3.39	20.06	8.82	52.02	5.38	25.00
11072	9.80	3.76	20.44	10.53	49.72	5.75	27.00
11096	9.62	3.55	19.69	10.86	51.28	5.00	28.00
	----	----	20.00	----	----	5.0	
	9.92	3.57	20.06	10.07	51.00	5.38	26.60
11221	9.77	2.81	7.81	11.46	63.85	4.30	22.00
	----	----	10.0	----	----	4.1	

TABLE IV.—*Continued.* ANALYSES OF COMMERCIAL FEEDS.

Station No.	Name of Feed.	Manufacturer or Jobber.	Retail Dealer.
	PROPRIETARY DAIRY AND STOCK FEEDS.		
11092	Haskell's Stock Feed....	W. H. Haskell, Toledo, Ohio	Meriden, S. A. Billings .. Guaranty
11225	Lenox Stock Feed.....	The Strong-Lefferts Co., New York	Waterbury, The Platt Mills Co.
11231	" "	The Strong-Lefferts Co., New York	Danbury, F. C. Benjamin & Co. . . Guaranty
			Average of the 2 analyses..
10997	Blatchford's Calf Meal...	J. W. Barwell, Waukegan, Ill.	New Haven, J. T. Benham Est. Guaranty
10978	Buckwheat Middlings ...	Quinnebaug Mills, Danielson	Danielson, Quinnebaug Store
11180	Gee's Ground Oil Cake Compound	G. E. Gee Grain Co., Minneapolis, Minn.	Derby, Peterson-Hendee Co.
11164	Germaline	Diamond Mill Co., Buffalo, N. Y.	Norwalk, Holmes, Keeler & Selleck

SAMPLED IN 1903.

Station No.	ANALYSES.						Price per ton.
	Water.	Ash.	Protein.	Fiber.	Nitrogen-free Extract. (Starch, gum, etc.)	Ether Extract.	
11092	9.45 ----	2.60 ----	8.87 12.0	8.96 ----	64.32 ----	5.80 6.3	\$24.00
11225	15.08	2.80	9.25	7.32	61.01	4.54	24.00
11231	10.20 ----- 12.64	2.94 ----- 2.87	8.87 9.9 9.06	9.93 ----- 8.62	63.64 ----- 62.33	4.42 3.3 4.48	23.00 23.50
10997	11.26 ----	4.45 ----	24.56 26.0	4.33 ----	50.76 ----	4.64 5.0	70.00
10978	14.90	5.10	29.06	3.23	39.94	7.77	22.00
11180	11.45	4.89	14.82	8.88	53.09	6.87	23.00
11164	7.82	3.80	12.81	5.08	68.51	1.98	26.00



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